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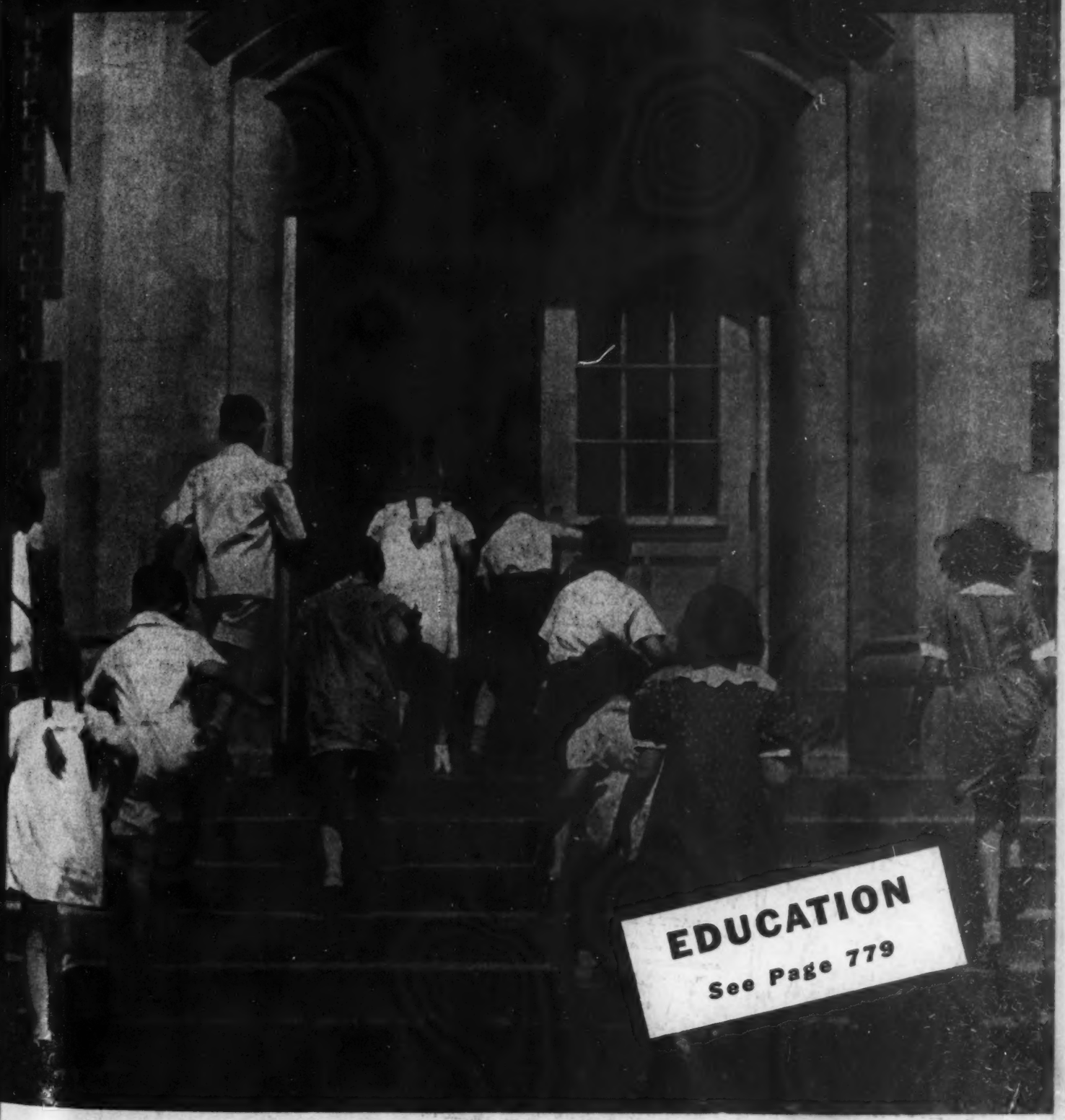
THE HEALTH MAGAZINE

HYGEIA



Nerves and Indigestion • Autopsies • Kidney Disease

AN AMERICAN MEDICAL ASSOCIATION PUBLICATION

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SEPTEMBER 1938 Vol. 16 No. 9

HYGEIA

THE HEALTH MAGAZINE

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PRESENTING

WALTER C. ALVAREZ, M.D. who discusses the physiologic and psychologic causes of indigestion. Dr. Alvarez is professor of medicine, University of Minnesota Graduate School of Medicine.

STEPHEN HABBE, who deals with the everyday problems of everyday people and their psychiatric similarities. Dr. Habbe, who is director of the Adult Guidance Service, New Haven, Conn., was formerly psychologist for the Psychiatric Institute of Grasslands Hospital and for the State School for Boys, Rochester, N. Y.

RUSSELL BURKHARD, principal, Frank A. Day Junior High School, Newtonville, Mass., who, from a survey made in that school, tells of numerous ways in which parents annoy their children.

JAMES J. SHORT, M.D., who contributes a diagrammatic and verbal exposition on the kidneys. Dr. Short is assistant professor of clinical medicine, New York Post-Graduate Medical School, Columbia University.

HOWARD V. MEREDITH, who answers the questions most frequently asked by parents of adolescent children. Dr. Meredith, who is author of numerous scientific articles and monographs, is a member of the staff of the Iowa Child Welfare Research Station, State University of Iowa.

CONTENTS FOR SEPTEMBER

COVER	Keystone View	
FRONTISPIECE	LaVerne Wilson	
LITTLE MAN, WHAT NOW?—An Editorial		775
NERVES AND INDIGESTION	Walter C. Alvarez	776
EDUCATION ISN'T "PATENT MEDICINE"	Richard Fechheimer	779
NORMAL ABNORMALITIES	Stephen Habbe	782
WHAT ABOUT AUTOPSIES?	Arthur H. Wells	787
STUDENT HEALTH		789
PARENTAL PESTS	Russell Burkhard	794
TUBERCULOSIS UP TO DATE: VI	B. P. Potter	796
THE HYPOCHONDRIAC	William Sharp	799
HOW RESTRICTED IS THE LIFE OF A PATIENT WITH HEART DISEASE?	Ernst P. Boas	800
OF MOSQUITOES AND MEN: II	Florence Pryor and A. W. von Struve	803
KIDNEY FUNCTION AND DISEASE	James J. Short	807
EYE PHYSICIANS, OPTICIANS AND THEIR WORK: I	Edward Jackson	809
THE WEIGH OF THE TRANSGRESSOR: I	Robert A. Kilduffe	812
COUPLETS ON THE POWER OF SILENCE	Park J. White Jr.	815
WHERE ARE OUR HOSPITALS?	William D. Cutter	816
DOWN IN THE MOUTH	F. F. Smith	818
PARASITE TRICKS: VII	George A. Skinner	821
HEALTHGRAMS		824
MEDICAL INSPECTION—A Poem	Ann Chipley	825
NOW ENTER PEACHES!	Harriet Morgan Fyler	826
EXERCISE: VI	Dudley B. Reed	829
BODILY CHANGES IN ADOLESCENCE: I	Howard V. Meredith	832
TO AMERICA'S SCHOOLS—YOUR HEALTH!		835
FORECAST FOR OCTOBER		836
SCHOOL AND HEALTH		838
QUESTIONS AND ANSWERS		845
NEW BOOKS ON HEALTH		849

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EDITORIAL

Little Man, What Now?

THE NEWSPAPERS and magazines of late have had much to say about the care of the people's health and about the extent to which the government should participate in providing it. Recently a representative of the Department of Justice indicated that an attempt might be made to indict the American Medical Association as a monopoly unless it cooperated in or ceased to oppose the establishment of various new methods of practice. The National Health Conference, recently held in Washington, submitted a five point program for improvement in medical care, which would involve the expenditure of some $850,000,000 each year for the extension of preventive medicine and medical care of the indigent and the low income groups, and which proposed in addition to set up a nationwide compulsory sickness insurance plan which would cover every human being in the population.

The most important argument against increased governmental participation in medical care is the effect of politics on medical practice. When there is mutual responsibility between doctor and patient, the patient is likely to obtain service promptly at the time he needs it from the physician of his choice. When the patient is covered by some form of government sickness insurance, he must pass through all the regulations and stipulations regularly established to assure government employees that they are not giving to the people anything to which the people are not entitled. This means red tape. In innumerable instances in the past red tape has interfered with the prompt administration of medical service to those who need it.

Not long ago in Chicago an unmarried Negro girl was about to give birth to a child somewhat prematurely. As soon as she realized that the birth process had begun she asked a neighbor to call a hospital maintained by a local governmental agency and to request the hospital to send for her since she was without funds. The clerk at the hospital notified her that the institution could not send for her since the ambulances were secured through the police department. An attempt was made to call the police department, which notified the caller that the ambulances could not be sent unless there was a call from some welfare or relief agency. A call was made to the hospital for Negroes, which was just six blocks away; yet at this hospital, word was given that the patient could not be admitted without a doctor. A call was made to the relief agency, which informed the caller that nothing could be done until there had been an official application for relief in due form and a visit by a social service investigator. Then a call was made to the office of a Negro physician in the neighborhood who said that he would come at once. However, the baby was born and died of cold and exposure before the physician arrived. A few days later a conference was held involving the representatives of the health department, the relief agencies, the police and others concerned with medical care, and an attempt was made to set up some sort of suitable organization to assure the impossibility of such an event occurring in the future. Red tape does interfere with medical service.

In a statement just published in *The Journal* of the American Medical Association another incident is cited in which a patient on relief in New York was requested to send in a complete record of the case, including all the medical care that had been given and the treatment concerned so that a supervisor for the government agency could determine whether or not the kind of treatment given by the doctor was satisfactory before any payment could be made.

In the novel, "Little Man, What Now?" one of the most gripping scenes was that in which the German citizen who had for years been paying maternal welfare insurance and compulsory sickness insurance fees to the government called to obtain a little assistance for his wife at the time of childbirth. Long before the necessary blanks had been filled out and long before there came the final consultation with the government physician, the child had been born and the family had well nigh succumbed to its emergency.

The representatives of labor, social welfare and similar organizations who are being steadily urged by propaganda into participation in government medicine little realize the harvest that they may reap. When the people who follow these leaders come to grips with the forms, the innumerable records and the complete dissociation of personality from the practice of medicine that may yet result, there will echo and reecho in their brains that question before which the German citizen stood bewildered in Hans Fallada's book: "Little man, what now?"

Nerves and Indigestion

By WALTER C. ALVAREZ

INABILITY TO STAND UP TO THE STRAINS OF LIFE IS HARD ENOUGH TO BEAR WHEN ONE IS RICH; BUT IT IS DOUBLY TRAGIC WHEN IT SHOWS UP IN THE SHOP GIRL WHO MUST WORK OR STARVE.

WHEN A MAN or woman begins to suffer with indigestion, what is the most likely cause of the trouble? Will an examination show disease in the abdomen, or will physicians decide that it is all due to nerves, worry or eating too fast? Actually the odds vary with the person's age and sex. Young people, and particularly young women, are more likely to suffer with nervous indigestion than old people, while persons past middle age who only recently have begun to have abdominal distress are probably suffering with organic disease. Particularly alarming is the indigestion that comes out of a clear sky to the older man or woman who has always boasted of a "cast-iron stomach." Obviously something has gone wrong: Perhaps a tumor has begun to grow, an old gallstone has started to move or the heart has begun to fail. Every person, then, past middle age who after years of good health begins to suffer with indigestion or abdominal pain should make tracks for the office of some good clinician, there to have a careful examination, including an x-ray study of the stomach and the intestinal tract.

Before describing some of the commoner digestive ailments, let us glance at the workings of the long tube in which these troubles arise. The stomach, that hard working and much abused organ, is a J-shaped muscular sack, lined with a complex membrane which secretes a powerful digestive fluid. Waves of contraction run over it every twenty seconds, breaking the food down into a pulp and mixing it with the gastric juice. At intervals, a small amount of the mixture is squirted into the duodenum, where it is met by the bile from liver and gallbladder and by a powerful digestant fluid from the pancreas. As the material is moved onward through the many coils of small intestine, it is broken down into simpler and simpler substances, which finally pass through the intestinal wall into the blood.

The digestive tract is richly supplied with nerves which, like telephone wires, connect one part of the intestine with the other and all parts with the brain. It is this close connection with the brain that many a nervous man and woman would like to cut. Once useful, it is now largely a nuisance. Ages ago, when a man's life depended on his ability to beat a tiger to a tree, his nerves helped him by shutting off all unnecessary activity in the digestive tract and by pouring into his blood powerful drugs, such as epinephrine, which helped him to run or fight. Today when a man fights for his life in our economic jungle, he telephones or writes a letter. He does not enter into that physical combat which would use up the chemicals that, with emotion, *still* pour into his blood. Hence these substances remain to slow up his digestion, irritate his colon and upset his heart action.

It is this nervous interference with the normal processes of digestion that causes numberless men and women to complain of "stomach trouble." Commonly the experienced diagnostician will be able to tell from the nature of the symptoms or the behavior of the patient that he is dealing with a case of "functional indigestion," but to be certain, he will make such laboratory and x-ray studies as will rule out the presence of organic disease. And even when he finds organic disease he may decide that psychic influences are also at work and so important that they must be combated if the patient is to be helped.

For instance, here is a man who gets a pain in the pit of his stomach at 11 in the morning and 5 in the afternoon, a pain which he can relieve by taking a little food or an alkaline tablet. He probably has a duodenal ulcer, an organic disease. But the chances are that every acute flare-up of the trouble is the direct result of worry, unhappiness or financial strain. In prescribing treatment, the physician insists on three things: rest, the avoidance of psychic upsets, and the taking of some easily digestible food every two hours. The average ulcer can be healed by this treatment, but a new one commonly forms if the patient does not mend his emotional ways so as to find some mental peace.

Another common organic disease of the digestive tract is inflammation of the gallbladder, that troublesome little reservoir of bile which lies in a fold on the under surface of the liver. Disease in this organ commonly causes gassy indigestion with occasional attacks of agonizing colicky pain, which begins under the lower ribs on the right side and strikes through the chest toward the right shoulder blade. Again, although the disease is organic in nature, many of the colics follow emotional debauches and fits of temper, which probably cause spasm in the ducts that carry the bile to the bowel. Although some sufferers with gallstones can be helped by diet, many have to be operated on sooner or later. Unfortunately there is no way of dissolving the stones by medicine, and their presence always constitutes a menace.

Another organic cause of indigestion is cancer of the stomach. The symptoms vary so much in different persons that they cannot be described here. The essential point is that whenever a man or woman, healthy for fifty or sixty years, begins to suffer with indigestion or begins to lose weight and strength, a careful examination should immediately be made, because cancer can often be cured when the patient goes to the surgeon early enough. Unfortunately today, the average person with cancer of the stomach waits a year before he faces the operating table.

In many cases organic causes for indigestion can be located *outside* the digestive tract. Here, for instance, is a man in his fifties who, after eating a large meal, cannot walk half a block without getting a cramping pain under the left breast. Because he is sure it is due to indigestion he goes to a stomach specialist, but really he should consult a cardiologist since his pain is due to a narrowing of the coronary arteries which supply the heart muscle with blood.

So much, then, for the commoner organic causes of indigestion. But how about that large number of cases (actually 50 per cent) in which the internist cannot discover anything wrong with the digestive tract? Here he is faced by the functional type of indigestion, in which commonly the patient's nervous system is so upset as to be causing misery and distress. There are many causes of nervous or functional indigestion, but the commonest are fatigue, worry, hypersensitiveness and insomnia. The important thing for the layman to learn is that functional indigestion, in which nothing organic can be found to explain the symptoms, is common, and that the patient never comes to any bad end because of it. When the nervous invalids of America learn this and stop insisting on a diagnosis of organic disease they will save themselves an untold amount of suffering and expense. They must learn enough about medicine and illness so that they will be more ready to believe a good clinician when, after a careful examination, he assures them that there is nothing seriously wrong.

When a fussy and worrisome woman is told that she hasn't a gallstone or an ulcer she is commonly disappointed, or even outraged. She refuses to believe that her suffering could be without organic cause, and she cannot face the months of struggle for self discipline necessary to peace and health. As such a woman once firmly said to her doctor, "I won't have a nervous breakdown. I had one years ago, and I know how hard it is to struggle out. This time I insist that you find something for which I can be operated on."

The last thing I wish to imply is that the nervous patient is *imagining* her distress. No, it is very real and probably more trying than the pain of ulcer. I often think of the lesson taught me by two women who came into the office together. The mother, a gentle old lady with a large cancer of the stomach, maintained that she was not suffering and that she did not need any treatment. What she was concerned about was the serious condition of her daughter, who for three weeks had been vomiting everything she put into her stomach. What was the matter? Nothing but fear. She became ill the minute she heard of the mother's trouble. Here, then, was one woman with the worst possible form of organic disease and no complaint to make and another with no organic disease but a painful illness requiring hospitalization.

Many persons who can easily see how *acute* fear may upset the digestive functions find it hard to see how *chronic* anxiety can explain their ill health. But such is the fact. Fretting over a sickly child, grieving for a wayward husband or worrying about an insolvent business commonly upsets the processes of digestion. As the great psychiatrist Maudsley used to say, "The sorrow which has no vent in tears may make other organs weep."

Financial worry ranks as one of the chief causes of nervous indigestion. Every day, doctors see patients who need, not medicine, but a steady income or a sum of money sufficient to free them from the miserable situation in which they are trapped. In this connection there comes to my mind the face of a sweet girl whose digestion has failed under the strain of hard work in an office, of abuse from the drunken father whom she supports, of grief over a financé who finally gave up waiting, and of sorrow over the sufferings of the mother, whom she will not desert. How fruitless to prescribe diet or sedatives for this unfortunate girl! Only an extra hundred dollars a month, which would solve her family's financial problems, could free her from a life of racking headache and nervous indigestion.

In many patients the same nerves that cause stomach derangements may also play tricks with the heart, causing it to race, or thump, or miss beats. These nerves send blood surging up to the brain to cause dizziness, or away from the brain to cause feelings of faintness, or into the skin to cause "hot flashes." But why, the reader may ask, are some persons' nerves so unstable, and why do they play such bothersome tricks? The answer is that many persons inherit weak nerves while others acquire them through overwork, worry, dissipation or illness. Commonly some mentally unbalanced, alcoholic or misfit ancestor hands down an instability of the nervous system, not sufficient to produce insanity, but enough to cause the type of discomfort which handicaps and hounds the millions of nervous and sickly and unemployable persons who are to be found in this country today.

This miserable inheritance accounts for much of what physicians call constitutional inadequacy, or an inability to stand up to the strains of life. Such inadequacy is hard enough to bear when the victim happens to be rich; it is doubly tragic when it shows up in the shop girl, the school teacher or the stenographer who has to keep working or starve. One can easily see why these unfortunate patients, facing a lifetime of discomfort and frustration, are so desperate and why they commonly beg surgeons to operate for something. Unfortunately, what they want is the sort of operation that would make a lean nervous greyhound over into a stocky bulldog, an operation as yet undevised.

But the situation of these inadequate persons is not always hopeless. Many learn to live with their handicap, and some bring to society rich gifts, particularly in the fields of art, literature and science. The patron saint of all inadequate persons should be Charles Darwin, who was so frail that he could never work more than three hours a day. Any small excitement, such as a visit with friends, sent him to bed with a shivering fit and nervous vomiting. Yet by accepting cheerfully the cross he had to bear and by working within the limits of his strength, he rounded out a long and happy and very useful life.

There is no question that many sufferers with functional indigestion can get well if they will bravely face the fact that they cannot do all the things their stronger fellows do. Many must stop looking around for a quick way out via surgery. Others must settle down to a long course of self discipline, which will have to include the conquering of habits of senseless worrying and of fretting over little annoyances. Many must stop trying to make over a husband or to run the world or to keep a house as neat and clean as an operating room. If for years they have overdrawn on the bank of strength, staying up late and frittering away energies, they must begin to rest and to live so quietly that each day they can put back into the bank of strength something of what they have borrowed and spent.

Men who have become "jittery" from overwork will often "come back" if they will only get away for a month of complete rest and then return to work for half days until their old energies return. Women could often cure themselves of functional indigestion if they would spend mornings quietly in bed for a few weeks. With rest and relaxation would come lowered irritability and less trouble from jangling nerves. Often when a physician tells a patient she needs a rest she replies, "Don't talk rest to me; I've done nothing else for months, and I'm no better." But usually she is wrong. She may not have been working; but she wasn't resting. All day and part of the night her mind was racing painfully from one fear to another: fear that the cause of the disease hadn't yet been found, fear of cancer or insanity, or fear that her husband—a few minutes late for dinner—was lying on a slab at the morgue.

Most of the fears that bring on nervous indigestion are silly, and the patient knows it. At first it is terribly hard to fight them; but gradually they can be conquered, and health can then be regained. During this period of reeducation, patients can profit much from the help of a kindly sensible physician; but ultimate success or failure depends mainly on the determination with which the individual sets out to rebuild his or her character.

SEPTEMBER—WITH A SIGH OF RELIEF, MOTHER SENDS JOHNNY OFF TO SCHOOL, CONFIDENT THAT TEACHER CAN "MAKE A BETTER BOY OF HIM." BUT THAT'S NOT TEACHER'S JOB. CHARACTER, LIKE CHARITY, BEGINS AT HOME. IT CAN'T BE INSTILLED BY DAILY TEASPOONFULS OF EDUCATION.

Education Isn't "Patent Medicine"

By RICHARD FECHHEIMER

SEPTEMBER—and you can almost hear a million mothers sigh with relief. School is open! Junior's out of mischief for hours every week day! No more week day mornings crammed with "Mother, I can't find my ball!" "Mummy, I'm hungry!" "Ma, can I go down to the river?"

September—time to turn over to Teacher part of the job of helping Junior wrestle with books and figures and things of the mind. Time for parents to allow educators to lend a hand in guiding their youngsters' thoughts and habits.

The more responsibility Mother can shift over to Teacher's shoulders, the more leisure she will have for herself. But somewhere the line must be drawn. Only so much of the parents' work can be handled by the school. Even the best of teachers has just so much time, just so much energy and just so much ability. Only that much can parents expect their children to receive.

Of course, like "patent medicines," education has been advertised as a cure for all ills. "Does your daughter lack poise? Send her to finishing school." "Let military school discipline your son!" "Develop charm and personality—take a mail order course in personal magnetism!" But, certainly, patent medicine thinking is as absurd in education as it is in pharmaceutics. Mental health and growth require as careful diagnosis and hygiene as does physical health. What public school teacher has the time to analyze the individual needs of each one of her pupils? And yet, what teacher has not been asked to "make a better boy of little Johnny?"

Only recently a rather successful business man startled a dinner party by proclaiming belligerently: "College is a fraud . . . it's robbery! There ought to be some way you can get your money back!" He pounded the table. His face was red. And, because he was very large and very angry, the other guests apparently thought it the better part of valor not to interrupt.

He raved on: "Four thousand dollars . . . that's what it cost me to send my boy through college! And what did I get out of it? What does any father get out of it? We get selfish, conceited youngsters who are concerned with only what they can get out of us."

Some one murmured into his napkin, "Like father, like son." Some one else found the courage to suggest, aloud, that college could not be expected to mold character.

"Then what can be expected of college? Listen, when I buy materials for my mill, I know exactly what I'm getting before I pay my money. When I buy machinery, I know just what each machine will do for me before I pay a cent. But when I buy an education for my son, no one can tell me what I'm getting.

Well, I know now what I was getting . . . I was getting cheated."

And, of course, this father was right. A college education had not given his son what he had expected it to give. He had apparently been led to believe that the college could remake, in four crowded winters, a personality that had been seventeen years in formation. For seventeen years the boy had followed the example of his forceful parent. A twig so far bent can hardly be pushed up straight by the best of professors—even if it were their function to try. And, of course, the job of a professor is not to remake his students' characters. His function (and the object of general education) is to train students' minds in intellectual activity. To ascribe any other function must surely result in confusing students, teachers and parents. A college may be expected to teach thinking, but it cannot be offered to parents as a nostrum for the mental ills of their children.

Dr. Robert M. Hutchins, president of the University of Chicago, takes a strong stand on that point. In his series of articles on education last winter in the *Saturday Evening Post*, Dr. Hutchins wrote:

Another thing which parents and taxpayers may not expect the schools to do is specialize in a multitude

SHE DID NOT MAKE ANY ATTEMPT TO FIT HERSELF INTO THE ROUTINE OF THE NURSERY SCHOOL AND PLAYED WITH WHATEVER TOYS SHE COULD PULL AWAY FROM THE OTHER CHILDREN.

Ellis O. Hinsey

of tasks that properly belong in the home, the church and the city. A wave of sex crimes in Chicago results in a demand that sex be taught in the schools, and the superintendent assures the citizens that this will be taken care of. Somewhere else a wave of automobile accidents results in the demand that safe driving be taught in the schools, and courses in safe driving are installed. This shifting of responsibility for everything to the schools can end only with the elimination of education from the curriculum.

Sex, safe driving and table manners all need to be taught somewhere, but the schools have a limited amount of time, and they require all the time they have to develop the minds of their students. It is likely that a generation of men and women whose minds have been properly developed would eliminate the necessity for crusades for safe driving. But it is certain that the schools cannot take the place of the home and the church without ceasing to be schools.

Still another thing the schools cannot be expected to do is build character, except indirectly. If they train children to work hard, and to work hard with their minds, they will be building character without calling it character building. But if parents do not want their children to grow up to be thieves, they should not depend on the schools. If the habits the child learns at home incline him to thievery, if his parents permit him to associate with young thieves, he may leave school a wise thief. The school can teach him to read and write, but it cannot isolate him from such powerful agencies as the home, the movies, the newspaper, the radio and the boy next door.

Thus it would seem that not only college education but primary education too is impotent to make drastic changes in the personalities of students. The hours spent in school are so brief a part of the day's activities. Classroom work is usually so undramatic compared with the excitement of a movie or a radio program. How can it have as great an influence on a child's mind? Teachers have so little to offer that is necessary and immediately desirable to a child, compared with the favors that a parent can offer. How can the teacher's influence be as great as that of the parent, even when the two have equal force of character?

Moreover, there are a myriad of other influences that are constantly impacting on a child's mind—the emotional atmosphere of the town and the times, a book that seems as real as life, mountains towering near and overwhelmingly. Even apparent trivialities, such as a broken toy, a lost dog, the talk of a friendly stranger, the smell of autumn leaves burning, all may leave little marks that total to an immeasurable force.

Even so great an enthusiast for education as Bertrand Russell will admit that schooling has its limitations. In his book titled "Education and the Good Life," Russell wrote:

> We are lazy, cowardly, hard hearted and stupid. It is education that gives us these bad qualities, and education must give us the opposite virtues. Education is the key to the new world.

Yet, further on in the same book, Russell added:

> The building up of character . . . should be mainly a matter for the earlier years. If rightly conducted, it ought to be nearly complete by the age of six. . . . I am convinced that, if children up to the age of six have been properly handled, it is best that the school authorities should lay stress upon purely intellectual progress, and should rely on this to produce the further development of character that is still desirable.

But even before the age of 6, school is a weaker influence than the home or the playground. A neighbor of mine had a problem child, a little girl 4 years old. The child had been given everything she wanted. She was wilful and self centered, and she clearly believed that the whole world was her special property. Obviously, she was unable to get along with other children and so had no playmates of her own age. She demanded that her mother be at once playmate and servant.

One day, in a misguided moment, I suggested to the mother that it might be good for the girl to go to nursery school. To my unending sorrow, she accepted my suggestion and sent her daughter off to a neighborhood nursery school.

From what I heard later, the child made no attempt to fit herself into the routine of the school. Because the teachers would not wait on her as her mother had done, she would do nothing they asked. She did not even try to be friendly with the other children. During the three morning hours she spent in the school, she generally insisted on staying by herself, playing with whatever toys she could pull away from the other children. She went to that nursery school, a selfish, perverse brat. At the end of the term she was still a selfish, perverse brat.

But now her mother had an excuse for her daughter's patent lack of discipline. I was told quite pointedly that the nursery school had ruined her darling's disposition. I was told, and so probably were many others, that I had tricked her into sending her baby to an evil place where she was taught bad habits. I was told that I should keep my foolish face out of other people's business. With the last statement I am now in wholehearted agreement. But I will not agree that nursery schools are evil places simply because they are unable to destroy, in a few hours a day, the effect of a mother's influence during the remainder of the day.

Character, like charity, begins at home. It cannot be instilled by daily teaspoonfuls of education. Education has its own vital function: to teach thinking. If a by-product of that teaching is fine character, we have been fortunate in receiving extra value. But parents who want to be sure that their child has fine character had better give it to him themselves.

Normal Abnormalities

By STEPHEN HABBE

IT IS a popular notion that soon one-half the population of the United States will be in hospitals for the mentally sick and that the remaining half of the population will be busy looking after them. Again, it is not uncommon to hear some one remark, "All of us are a little crazy."

Regardless of the accuracy of these notions, George Citizen, though apparently aware of the prevalance of mental disturbances in society, cherishes the feeling that his particular set of peculiarities is pretty bad and that the asylum keepers would certainly come around and get him if they knew what was going on inside his head. He is reluctant to disclose his mental state to others. He hopes that somehow his troubles will go away and stop bothering him. Then, he feels, he could be efficient and happy in life.

There is a more likely avenue to these goals. Few know it! Few understand that their mental disturbances are very much like those of their friends and of thousands of other average citizens. *Few are aware of the essential normality of their presumed abnormalities.* Once this simple knowledge is assimilated, there comes a new understanding of life and a new interest in it.

What is meant by the paradoxic expression, "normal abnormalities?" It includes excessive fears, inferiority feelings, sleep disturbances, memory lapses and nervous habits of all descriptions. The average person could add a dozen or more items like these from his own experience.

These abnormalities fall within the range of normal human experience as surely as do chest colds, toothaches and minor injuries. The difference lies in the way we think about the two kinds of experiences. We take physical upsets in our stride. We tend to ignore them unless they cause us considerable pain or trouble, in which case we set about actively to correct them.

Not so with mental or psychologic upsets! We do not expect them. We do not know how to deal with them. We are nonplussed! This very attitude of uncertainty and confusion allows the mind to play tricks. Soon the disturbance has grown to many times its true proportions. It looms before us an insurmountable hazard. Unmasked and understood, its size dwindles. Sometimes we learn that it had no size to begin with.

I am reminded of the story of the young girl who, faced with her first great emotional crisis, wisely sought the counsel of her grandmother. She poured out her troubles and found comfort. Afterward she confided, "Grandma, you must have seen a lot of trouble in your life-

R. I. Nesmith

time." "Indeed I have," the old lady agreed; then she added softly, "but most of it never happened."

Let no one conclude too hastily, however, that these normal abnormalities are always without substance and possible significance. Sometimes they are both real and important. They may indicate illness as surely as fever indicates illness. They may interfere seriously with the entire life pattern of the individual. But the point is that this is usually not the case. The healthy man, once he understands how wide the range of normal experience really is, will cease worrying about a large share of his feelings which he once looked on as strangely abnormal. But what *is* normal experience?

Psychologists like to talk about individual differences. The subject is important. Obviously, it is necessary to know how people differ in order to build up their weak spots and to capitalize their strong ones. Institutions too long have tended to standardize their procedures, dealing with human beings en masse according to some established policy. Disastrous results of such practices in education, penology and religion, to mention only three fields, furnish daily newspaper copy.

But, while agreeing that the individual must be the starting point and the focus of all psychologic work, yet our chief interest just now lies in emphasizing the similarities rather than the differences in persons.

In his book "The Range of Human Capacities," David Wechsler reported that he had examined some eighty human traits, including both physical and psychologic characteristics, and found that the performance of the "best" individual usually was only about twice that of the "poorest" individual. The ratio of scores

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rarely exceeded 3 to 1. Wechsler called cases 2 and 999 out of a thousand unselected his extreme cases. He arbitrarily labeled cases 1 and 1,000 "abnormal."

Thus, if at random a thousand men were measured for height, it is likely that the second-tallest man would be about 1.2 times as tall as the second-shortest man. The tallest man and the shortest man would be considered abnormal as far as height is concerned. Similarly, let us catch a thousand boys of a given age and measure their intelligence by the Stanford-Binet scale. We know that in such a group the second-brightest child would score about 2.30 times as high as the second-dullest child. If the latter obtained an I. Q. (Intelligence Quotient) of 60, the former would obtain one of about 138. The extreme case at either end of the distribution, with intelligence quotients let us say of 59 and 140, would be termed "abnormal" as to intellectual capacity. Essentially the same picture is revealed by measures of speed in running 100 yards, by measures of blood pressure and so on. The tendency is for the highest score to be about two times the lowest score.

Everyday experience teaches us that all men are not created equal. Wechsler's evidence suggests that the differences are apt to be well circumscribed. We have much in common with our fellowmen—more, probably, than we have been accustomed to believe.

Certainly this is true for the way we *think* about things. If we get depressed when things go wrong, so do others. If we lose patience with a highly competitive society and long to sail away to a distant island, so do our neighbors. If we get hopelessly entangled in the complexities of life and see no way out, so do thousands of others. Normal experience includes these circumstances as part and parcel of the life process. The acceptance of deviations in thinking and acting both in ourselves and in others would make for easier, more graceful living.

There are a few specific ghosts which haunt the minds of most of us at one time or another. It will be well to mention these and to indicate some ways of attacking and banishing them. Eduard C. Lindeman of the New York School of Social Work once offered a general prescription of merit. He affirmed: "The antidote for worry is perspective. . . . The antidote for fear is understanding. . . . The antidote for anger is insight and blending of feeling and knowledge. . . . The antidote for hatred is poise."

Perhaps the favorite mental torture is feeling inferior. Let us admit freely that some of our friends are better looking than we are, that some play better golf than we do, that some can think faster than we can, that some are more popular than we are. All these things undoubtedly are true. Also, probably it is equally true that we are handsomer, smarter, better in athletics and more sought after by society than some of our friends. Each individual tends to move in a group of approximately his own "speed." Thus the chances are that a given individual will find himself bettering his associates in different activities about 50 per cent of the time. This is a desirable state of affairs! Unfortunately, parents and schools like to teach us to desire and expect about seventy-five or more successes in a hundred trials with our peers. (Our parents were taught by *their* parents to aspire to the presidency of the local bank, if indeed not to the presidency of the United States. We are making progress!) For even a fair slice of the

population it is obviously a mathematical impossibility for every one to exceed every one else. Of course, it is no more desirable than it is possible. Exceeding our associates about half the time and learning to expect this should help us maintain a wholesome balance between extremes of inferiority and superiority feelings. It is important to accept ourselves for what we are—to develop our potentialities and to adjust sensibly to our limitations.

Mood swings are daily experiences with all persons. The functions of most glands influence our moods. So does the food we eat, the people we talk with, the atmospheric pressure and literally a thousand other things. Periods of elation give us little concern at the moment, but the consequences of our acts while in a state of euphoria may be as serious as those while depressed. There is a large amount of individual variation in moods. Those subject to great swings should avoid making important decisions while far "up" or "down." The average person can learn to control his moods to a considerable degree. Practice in relaxing and practice in thinking of our problems as occurring over a span of time, rather than in the moment only, are suggested helps. Attention to the large matters of physical health and hygiene are, of course, fundamental to this entire discussion.

A third common problem is that of fear. Modern man is sensitive to myriad fears which never troubled his forefathers. Modern man is "on edge" every waking moment to protect himself from fear-provoking agents, real or imagined.

Recently in the *Journal of Abnormal and Social Psychology*, Marie H. Means reported a study of the fears of 1,000 college women. From 0 to 28 fear situations were listed by these students, the average being 6 and the total being 349. The most prevalent fear stimulus was the snake. However, fear reactions were also evoked by canned foods and theatrical people, by skating and grasshoppers, by birds, bicycles and bananas. Actually there are few agents abroad in the world which imperil our lives or our safety, but it is a psychologic commonplace that fear reactions can be attached to almost any stimulus through a process known as conditioning. The mere understanding of this phenomenon may alleviate some of our particular fears. It is of significance in the study just mentioned that only 38 per cent of the girls felt that they could trace the origin of one or more of their fears.

The counterpart of conditioning is reconditioning. Thus, while it is true that certain associations can instil within us a fear of the dark or a fear of factory whistles, it is equally true that a program of reconditioning can remove these fears. It hardly needs to be said that fears of high places, syphilis, taxicabs and many other things may perform perfectly legitimate functions in life. Fear rightly has often been described as one of our most valuable emotions. Only when it gets out of hand does it turn from an asset and become a liability.

Who will deny impulses to escape responsibilities and to seek adventures in new worlds? Boys run away from home and school to roam in the woods or hunt pirates along a waterfront. Men throw up good jobs and desert satisfactory wives in the name of freedom. Definite antisocial feelings crop up in the breasts of staid citizens. Freud marvels that there is as little "boiling over" as there is. The point I am attempting to make is that such impulses do

not brand us as wicked or as different from our neighbor who seems to plod his daily routine uncomplainingly.

The great appeal of the courtroom scene in a recent movie, "Mr. Deeds Goes to Town," wherein the hero turned the tables on the accusing psychiatrist by showing how he too was afflicted with little nervous habits—"doodlings"—testifies to the universality of such practices. However, it doesn't mean that we are "pixilated" because we can't leave our finger nails alone, because we feel a compulsion to total the license numbers on passing automobiles, because we avoid stepping on the cracks in a cement walk, because we scratch ourselves or pace the floor when we are nervous, or because we do any one of a thousand things at times to try to relieve our emotions. Some one has said that these practices show character "leakages." Perhaps they do. Probably they do not represent the best of all possible adjustments to life. Disregarding these matters, the point I wish to make is simply that of the commonplaceness of the feeling and the act. Nervous habits of the kinds that have been described fall well within the bounds of normal behavior.

And so it goes with many of the other normal abnormalities. A class of graduate students at Columbia University recently collected a list of the reasons prompting people to seek the advice and help of psychologists. The final enumeration of items filled thirty-four typewritten sheets and included 1,071 reasons. It is safe to guess that well over 90 per cent of the problems had to do with normal abnormalities.

Inevitably, there will be some readers who will assent to this general thesis but who will continue to hold reservations about their own peculiarities. A sensitive group of persons is attracted by the mere heading of this paper. These persons among the lay group merit special attention. James Thurber was thinking of them when he wrote in "Let Your Mind Alone": "Every third person who reads these books [popular, self-help "personality" books] has a pretty firm idea that his mind is cracking up."

So I propose to mention, however briefly, some remaining normal abnormalities lest some one complain that I have passed over his pet anomalies. In passing, I might remark that any one who fails to see himself in at least half of the items should consider himself most uninteresting and hie off to the nearest psychiatrist.

Sleep Disturbances.—Compare Robert Benchley's movie short "How to Sleep." Research studies indicate that the average person turns or changes position about twenty times or more a night in his sleep.

Bizarre Thought Sequences.—Sometimes the mind wanders away to strange thoughts, seemingly quite unrelated and foreign to the subject at hand. As a matter of fact, there are always definite associations of thoughts, though they may not be recognized.

Suicidal Impulses.—Often during periods of emotional depression our thoughts turn to suicide as a way out of our troubles. Generally we find better solutions.

Laziness.—Need we elaborate this item?

Guilt Feelings.—Universal!

Memory Lapses.

Feelings of Impending Insanity.—A particularly nasty ghost—but only a ghost.

Disillusionment.—The college graduate is told by the commencement speaker that he is the Hope of the World. The next week he goes out and tries to get a job at $20 a week.

Irritability.

Sexual "Perversions."—Much of our thinking along sex lines is distorted by deep-lying teachings and tabus. Suffice it to say that the range of normal behavior in this field is vastly greater than most persons imagine.

Tendencies to Rationalize and to Compensate.—How would we get along without these two good friends?

Sadistic Acts.—Sexual perversion in which satisfaction is derived from the infliction of cruelty on another.

Masochistic Behavior.—Sexual perversion in which satisfaction is derived from being cruelly treated.

Religious Perplexities.

Superstitions.—It is amazing to learn of the survival among intelligent persons today of ancient beliefs and practices which science has debunked time after time. A survey of opinion, made at a large state university a few years ago among students entering a course in psychology, testified to the extent of such survivals. A random selection of items reveals the following:

94 per cent considered red to be the color which most enrages a bull.

76 per cent feared the possibility of becoming mentally defective from overstudy.

68 per cent had confidence that practice always makes perfect.

42 per cent suspected the intelligence of comely persons.

34 per cent agreed that our winters used to be longer and colder.

26 per cent believed that children were born with a sense of right and wrong.

4 per cent felt that it was inviting bad luck to begin a task on Friday.

Albert E. Wiggam has written an interesting book on this subject discussing thirty-five popular notions under the amiable title, "Sorry, But You're Wrong About It." *(Continued on page 837)*

What About Autopsies?

By ARTHUR H. WELLS

IN ALL BRANCHES of science the ever increasing effort to replace theory with basic facts is a gratifying and welcome contrast to the relative absence of critical investigation by our predecessors of not so many years past. Without a doubt, the present trend of people in nearly all fields of human activity is in the direction of a more practical and reasonable consideration of problems of life with a corresponding diminution of the influence of preexisting beliefs, dogma and even established customs not based on facts or logical reasoning. This is particularly true in all studies relating to the anatomy, functions and diseases of the human body. The practical benefit to mankind from this healthy trend has been so apparent that one can hardly read a newspaper or magazine today without finding a frank and critical discussion of intimate problems or studies pertaining to the human body.

The universal plea of modern progressive physicians for a careful consideration of one of the most intimate and to them the most important of these subjects, the postmortem examination, has met with ever increasing success. Because of the great humanitarian and scientific value of this procedure and in an effort to express their sincerity, groups of physicians in many parts of the country have agreed to request an examination of their own dead bodies and of those of their loved ones.

These are the men who are constantly in contact with the suffering and dying patients in our hospitals and homes. It is to them you will in time probably go seeking relief from pain or the recovery of rapidly ebbing strength. They will do everything in their power to help you. If they fail they will want to know just why the treatment didn't save you, because there will be others with the same condition who will in turn plead for their lives. Every death, no matter how apparently inevitable, is a symbol of defeat to the modern physician. "Was the disease properly recognized?" "Why was the fever so high?" "That cough must have meant complicating pneumonia, or did it?" "Would an operation have saved the patient?" or "Should another medicine have been used?" Unless they can see with their eyes the internal organs, they will never be certain what diseases were present and whether their treatment should be changed for the next patient with the same complaints and similar visible external changes.

The public should be delighted that these men have a means of checking up on their successes and mistakes and that they are anxious to do so. The autopsy is the most distinctly professional feature in medicine and the least appreciated by the public. As a general rule, the better the physician, the more anxious he is to have the examination made. Not many years ago the average physician in this country buried his mistakes; and a few, as a result, developed a sense of infallibility and self delusion to a degree which proved to be

harmful to their most confident and trusting patients.

Physicians know that the fundamental basis of their knowledge of diseases lies in the actual changes in the organs of the body, just as each of the many skin diseases marks the surface of the body in its peculiar way. Today there is more progress in their profession and all the basic sciences on which it is based than ever before. Each new discovery means thousands of lives saved and much suffering banished. One of the most common causes of death in middle-aged men, coronary thrombosis, was discovered sixty years ago; and ever since, many of the victims of this disease have been given an extra five or ten years of life because of the original autopsies. At least two persons a week have their lives saved in Duluth alone, a city of 100,000 population, because an American physician discovered the disease, acute appendicitis, at an autopsy. Rare and curable diseases are being constantly found at postmortem examinations. They are reported at medical meetings and published in internationally circulated medical journals for all physicians and their successors to learn about. The value of this kind of medical activity is incalculable and certainly far exceeds that which the public knows so well as the routine practice of medicine.

Being in close contact with the issues and facts, lay boards of directors of hospitals throughout the country have seized the opportunity of playing their part in this struggle against misery and death by employing pathologists, physicians with postgraduate training in autopsy and laboratory sciences. The hospitals have assumed all expenses rather than run any risk of interference with the success of obtaining permissions for the examinations from relatives who may not want to increase their financial burden. This cost to the hospital has been estimated to be between $90 and $100 for each autopsy; yet the benefits to the relatives, the hospital, the community and medical science are such as to make the program indispensable.

The pathologist may be considered in the light of an efficiency expert and teacher for the hospital staff physicians and personnel. One of his duties is to conduct the postmortem examinations with all due respect and care for the dead. This is done in the presence of the physicians, interns and nurses. It is as orderly a procedure and even as artistic as any surgical operation on the living, barring aseptic technic. Each organ is inspected carefully. No mark is made that will be visible, and any special requests are followed to the letter. The opening is sutured closed as it would be in any other operation.

Embalmers say that a properly conducted examination improves the appearance of the body by relieving any discoloration of the face and permitting a better circulation of their fluids. The record of the patient's illness is read at the time of the examination. The doctors present discuss each point of diagnosis and treatment, now knowing the undisputed cause of the disease and the complications. The case is later discussed before the entire medical staff without the use of the patient's name. The facts are put in the hospital records for future reference and given to the relatives by their physician. The body has not suffered from pain, humiliation or callous scientific curiosity. It has performed its last altruistic and humanitarian function on this earth.

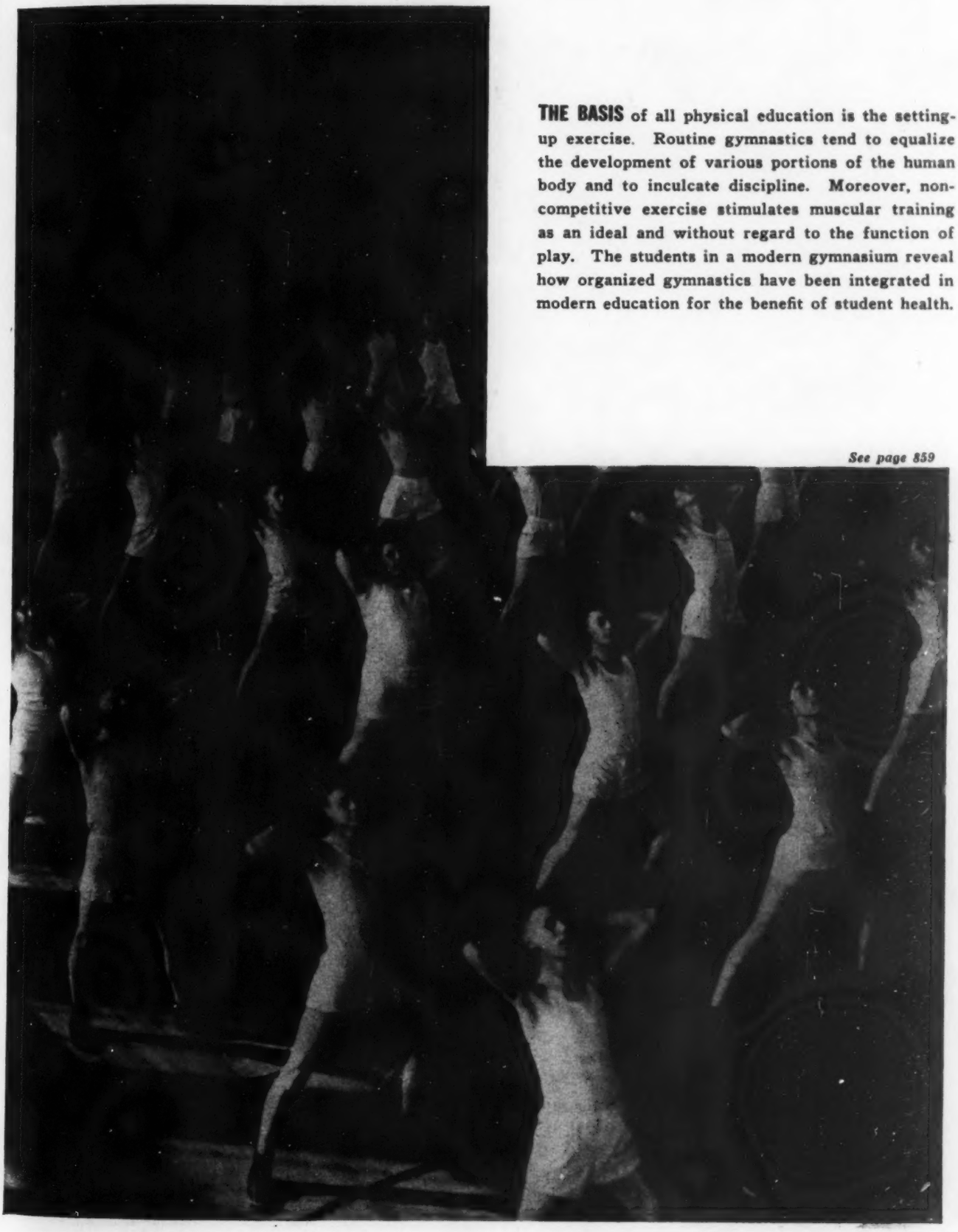
The prevailing religious systems of this country are the best supporters of postmortem examinations. The Roman Catholic church, Jewish faith and Protestant denominations describe an instantaneous flight of the soul from the body at death and the eventual decomposition of the body to the elements of the soil. Eminent Orthodox Jewish rabbis, scholars and leaders have repeatedly and unquestionably stated firm convictions that to serve humanity through such examinations was sanctifying rather than desecrating the dead.

Strange as it may seem on first thought, the family of the deceased receives the greatest degree of benefit and satisfaction from the postmortem examination. They realize and appreciate it as soon as the first shock of the grief is over, for then they begin to wonder, "Just what was the matter with Jack?" "Could we have done anything more to save him?" "Are others suffering as he did?" "Is the disease in our family, and can we prevent it from recurring in one of us?" "Was his condition related to the accident while at work?" Insurance companies have no reason for delays or refusals in payment when the facts, and not opinions, are laid before them. Any evidence of death by criminal actions is revealed. It is not infrequent for the relatives to return and express their gratitude to the hospital and the pathologist for their helpful advice and examination of deceased loved ones.

It is a recognized fact in hospitals that the more intelligent and unselfish the surviving relatives, the more certain it is that they will approve of an operation after death. This act alone frequently indicates refinement and depth of feeling for their lost one.

As certainly as general knowledge grows and the public becomes more and more informed; as certainly as superstition and blind sentiment fade away before clear logic and wide understanding; as certainly as mankind tries to leave the world a better place than he found it—so certain it is that the custom of examining the dead will be universally established. To this end each and every person can play an important part.

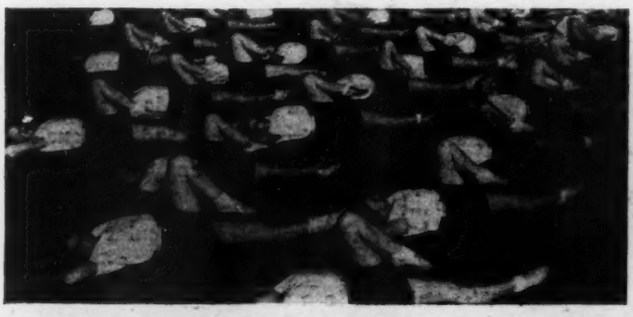
STUDENT HEALTH

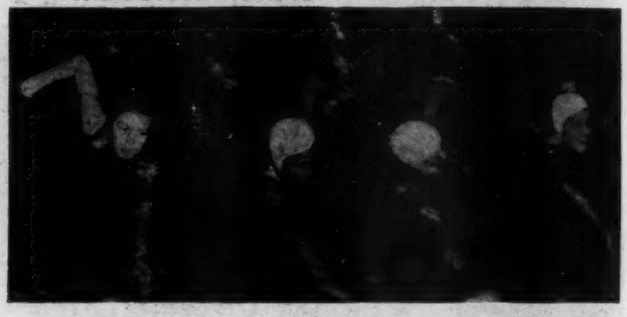


THE BASIS of all physical education is the setting-up exercise. Routine gymnastics tend to equalize the development of various portions of the human body and to inculcate discipline. Moreover, non-competitive exercise stimulates muscular training as an ideal and without regard to the function of play. The students in a modern gymnasium reveal how organized gymnastics have been integrated in modern education for the benefit of student health.

See page 859

FUNDAMENTAL in the advancement of health is exercise for sport. The methods and devices are innumerable. How sports are integrated in education for health is shown by ten conspicuous examples: gymnasium, badminton, archery, swimming, lacrosse, high jumping, ice skating, basketball, wrestling and dancing.





TO JOHN HUMPHREY NOYES is given the credit for introducing esthetics and hygiene into the schoolroom. The old-fashioned schoolroom with uncomfortable seats conducive to bad posture, with wrong lighting and somber walls did almost as much to inhibit education as to advance it.

IN THE MODERN SCHOOLROOM, children are seated at comfortable tables and desks with suitable lighting and beautiful surroundings. In such an atmosphere, learning thrives.

NUTRITION is a vital part of modern education. Milk, the most nearly perfect food, is today furnished to hundreds of thousands of children in American schools. Sanitary containers add another sign of modern times.

VOCATIONAL EDUCATION is part of the modern curriculum. School girls study child training.

THE BOYS in the courses in mechanics learn how to protect the eyes against flying sparks and chips.

ILLNESS is recognized as a fundamental factor in human life, and both boys and girls learn something about home nursing.

BOYS AND GIRLS also learn how cooking improves food. Fundamental facts about vitamins and mineral salts can be integrated in the curriculum and mean more for human happiness than the geography of Central Africa.

MECHANICAL DEVICES in special classes smooth the educational path of the hard of hearing.

IN OPEN-AIR CLASSROOMS for children with respiratory troubles, rest is part of the curriculum.

BRAILLE opens new worlds to the blind, literally heaping treasures into the student's eager hands.

TO CONSERVE VISION, sight-saving classes need special lighting and books with large, clear type.

INDIVIDUALIZATION in education is the order of the day. These students, above the average in intelligence, are allowed to progress at their own rate.

EDUCATORS, with physicians, have begun to realize the importance of individualization in human advancement. The child's capacities must be served.

PARENTAL PESTS

Are you one of them? Do you nag? Do you snoop? Do you scold? Before you decide smugly that you are the ideal parent, try to see yourself through your children's eyes. You may be surprised, says

RUSSELL BURKHARD

BEFORE THIS old world side slips much farther on its merry way, it might be well for parents to halt and listen to the shouting. So much clatter seems to be coming from the younger generation which they brought onto the globe. When prison wardens hear a "yammer" they investigate, if they know what's healthy. If we give heed, we probably won't hear what is technically called "yammering" nor scarcely even a "yam." Instead we'll no doubt find a broad background of muttering, argument, coaxing, wailing and general audible discontent.

Shall we go our way toward a fool's paradise, blissfully ignoring sources of dissatisfaction, or shall we do what is healthy for us? Any normal person with the remnants of a seven year itch under his left shoulder blade and a job to perform would, of course, take the time to remove the irritant, the better to do his task.

So, let us pause. Let us even stop, listen and look. On examination we may find some strange conditions. For instance, in the secondary or high school age group we seem to get the greatest noise. We parents perhaps think differently, especially when we figure how much we sweat and worry to give this crowd food, shelter, rapid transportation and pocket money. Well, just what can they be hollering about? It can't possibly be about us, can it? Yes, parents and friends, it can be, and it is.

When the children were very young it was our duty and pleasure to guard, shelter and

"shock absorb" them from all the threatening vicissitudes of life. When they grew older and craved self determination, self reliance and self expression the parents didn't let up on their vigilance in proportion to their age. And that, parents, is the crux of the shouting.

Probably you don't agree. No doubt, with righteous indignation, you feel that this might be the case with other mothers and fathers but certainly not the case in your home.

In order to present reasonable evidence some normal ninth grade boys and girls in a typical American suburb were asked to write anonymously on the title "How Parents Annoy Their Children."

For long these young people had been dodging verbal jabs such as too selfish, no control, lazy, discourteous and immoral. It was explained to them that their written response was to be sort of a defense measure. No rules of the game were expounded. These young folks were merely given the writing utensils and a wide open field. Handsomely enough, their replies all were noted for the consistent, self imposed adherence to Marquis of Queensberry regulations. Not an unfair blow was struck, and a great deal of loyalty was displayed. No pupil gave his identity.

There were seventy responses about evenly distributed among boys and girls of the first year high school age, normally 14 to 16. The more prominent grievances fell into five or six main grooves. They are given in the order of frequency with which they appeared.

1. Nagging: Nine out of ten spoke emphatically of it in one form or another. Principally, our attacks came when they were either studying or reading. Some thought nagging was the cause of more home unhappiness than any other item.
2. Babying: They simply loathed being fussed over. From "Where are your rubbers?" to "being driven to school in auto," they positively wanted to get out of the care and solicitation given them in early childhood.
3. Unfair distribution of work or home chores: The papers fairly bristled with the inequalities that were heaped on them. The girls felt that dishes were no more a female duty than a male. Boys howled that their younger brothers or sisters "got away with murder," that "parents ought to *make* us mind rather than just *talk* about it."
4. Inconsiderate interruptions: Most papers stressed this point. Some children said that they were quite willing to do their share, but it provoked irritation de luxe when the demands thoughtlessly broke into Latin, Algebra or English assignments. Of course, they let it be understood that they were constantly being intruded on during their favorite radio programs; or else the intrusion came just as they settled down for some enjoyable reading.
5. Lack of cooperation when buying their clothes: Parents wouldn't take the time to see what other boys or girls were wearing. It was "Well, I'll take this coat, or those shoes, or that sweater." Parents ignored styles and colors and bought "useless things like hats and neckties." One lad "wanted a tweed coat but not Father's." Another just couldn't get his parents to buy a parka, "which would have done for skating and Sunday school, and saved them money." And then after the garments had been bought, the parents were "darn inconsiderate in insisting on warm things for warm days. Don't they know we're warmer blooded?"
6. Neglect of telephone messages: Apparently we parents don't rate at all in this item. Juvenile events and plans mean just as much to *them* as ours do to *us*. This quotation appeared in substance in approximately forty-eight papers: "Whenever my friends call me on the telephone, and I am out, I never know about it for two or three days after, if at all." Funny isn't it, how upset we parents can be when in our absence from home, one of our friends calls for a bridge date, and the children fail to list the call?

The list from here on dwindles. There were scattered annoyances that referred to "snooping in bureau drawers," "always investigating what I read" and "insisting that I carry an umbrella of all things."

On four papers there were amusing references to the way we ignore the youngsters' road directions when motoring in strange territory. In particular, "Why didn't you tell me this was a dead-end road?" "I did, but you wouldn't listen." "Well, you should have told me sooner." "See," said the writer, "that's all the thanks you get."

As a last morsel, the one concerning accidents is so human: "My parents annoy me by scolding me for something that was an accident and would have been passed over had they done the same thing."

Finally, after discounting the inaccuracies and optimism of our young folks, we must admit that their grievances are on a sporting level.

Undoubtedly we can and should meet them more graciously. If they love us in spite of our heedlessness and theirs, think what a perfect possibility we have of making come true that old framed piece of needlepoint:

GOD BLESS
OUR HOME

***B. P. POTTER** explains what can be expected from pneumothorax by way of cure in the treatment of tuberculosis*

Tuberculosis up to Date: VI

SINCE PHYSICAL and mental rest—at times supplemented by collapse treatment—remains the most potent measure in combating pulmonary tuberculosis, it is important to have a definite and detailed conception of rest. I will consider first physical rest, by which is meant absolute rest in bed in all active cases whether or not fever is present. This inactivity must continue as long as there is any evidence of rapid changes going on in the lungs, whether or not these changes are accompanied by symptoms. It is only when this period of change of the lesion has passed that bathroom privileges, and later graduated exercise, may be given. The passing of this period may take several weeks in some and months or years in others.

This conception of rest is not new; it is merely a restatement of a fact long known but which has come to be more universally appreciated in recent years. It is the outcome of the debate still in progress between those advocating collapse treatment in all cases as soon as the diagnosis is made and the group that believes in interference with nature's efforts to heal the lesion only when the latter fails after a liberal trial period. This controversy has brought forth many interesting points, among which is the fact that rest as herein defined had in the past been applied for short periods or not at all in the fever-free patients in most tuberculosis institutions. As a result, therefore, many patients, although showing a gain of weight and often a subsidence of most of their symptoms, would continue to show progression of their lesions; thus collapse of the lung would become necessary. Furthermore, it has been shown too that even those receiving collapse treatment make more lasting "cures" and are less prone to develop complications when bed rest takes first place in the management of their disease. It is not surprising therefore that a reinvestigation of the principle of rest was stimulated, resulting in the formation of this concept.

Not all afebrile (fever-free) patients require this stringent regimen of rest. It applies only to those cases in which are found lesions which as a rule manifest more or less rapid changes. Those presenting older lesions in which changes usually go on at a slow pace may be placed on a more or less modified rest routine.

Physical rest in itself is not sufficient. One's body may be at rest; yet an "inner struggle" may be going on which drains one's energy as much as would physical exercise. At the bottom of this inner struggle is a mind bombarded by varied and often complicating thoughts which circle about such matters as the possible fatal outcome of one's disease, the uncertainty of the length of the present incapacity even in the face of a future recovery, the fear of possible complications and so forth. Besides these thoughts of concern for the preservation of oneself, there enters the conflict to adjust oneself to an inactive life torn asunder from all that one has held so vital for happiness. Rest of the mind cannot however be attained as easily as that of the body, for the doctor cannot just order that; but by full and honest discussion with the patient regarding his condition the physician can usually allay the fears and overcome other obstacles that interfere with relaxation of the mind.

What can the tuberculous individual expect with the rest treatment? This question can be best answered by considering the type and extent of the disease. In the type found in early tuberculosis when a small area of one or both lungs is involved, as high as seven out of every ten persons eventually get well. When the disease is more advanced and consists of a conglomeration of tubercles, more or less discretely arranged, the outlook with rest is good. In this group, too, should be placed those cases in which in addition to the scattered tubercles is found a small cavity. As high as five out of every ten patients eventually get well in this moderately advanced stage. When the far advanced stage is approached, by which is meant extensive involvement of one or both lungs and usually a cavity, the promise for recovery with rest alone is not encouraging. But even in this stage of the disease if the involvement, although extensive, consists merely of patches of tubercles with or without a small

cavity, final arrest of the disease is attained in a good number of patients. On the whole, however, in the majority of patients in this group, bed rest must be supplemented by collapse therapy.

Besides these general considerations the response to bed rest in any case depends on the compactness of the arrangement of the tubercles, whether one or both lungs are involved, the location and the size of the cavity and whether complications, such as involvement of the throat or intestines, are present. Tubercles compactly arranged in dense patches have been known to break down more readily and to form cavities. In any case, involvement of both lungs prolongs and makes recovery more questionable. Cavities larger than 1 inch in diameter resist closure by rest alone and must be treated sooner or later by some form of collapse therapy. Involvement of the throat and intestines, previously considered a bad omen, is now not looked on with such pessimism, although it must be admitted that these complications always darken the picture.

It will be evident therefore that rest is a highly important factor in the treatment of all stages of pulmonary tuberculosis and is responsible for arrest of the disease in the majority of the minimal and in a large number of the moderately advanced and in a few of the far advanced cases. But besides complete arrest of the disease, bed rest is largely responsible for the improvement which takes place in any case regardless of the stage of the disease. Therefore I feel that in spite of the excellent results obtained with any form of collapse therapy, its application should serve merely as an adjunct to rest.

In considering collapse therapy I refer to pneumothorax, the nerve and the rib operation. Of these measures the air treatment, or pneumothorax, is the simplest and the most effective. If it were not for adhesions, pneumothorax would be effective in every case in which a collapsible cavity is found. Some physicians do not urge or suggest pneumothorax to any one who presents a small cavity unless a fair trial of bed rest fails to accomplish closure. When the

Courtesy of Life

THE PRINCIPLE OF PNEUMOTHORAX IS THE ONE UNDERLYING ALL FORMS OF COLLAPSE THERAPY; THAT IS, THE BRINGING ABOUT OF RELAXATION OF THE DISEASED PORTION OF THE LUNG BY INTRODUCING A LAYER OF AIR BETWEEN THE LUNG WITH ITS IMMEDIATE COVERING AND THE LINING OF THE CHEST WALL.

cavity is more than 1 inch in diameter, collapse therapy is considered but may not be suggested, depending on the duration of the disease, whether the condition is confined to one or both lungs, the location of the cavity and the amount of rest the patient has had before admission to the sanatorium. It is these factors that determine whether pneumothorax shall be induced immediately or shall be delayed. It is obvious that in this group, judgment based on previous experience is the only guide in the management of the disease.

It is interesting to listen to discussions by patients on the value and the dangers of pneumothorax. I have often seen an individual worked up to the point of nervous exhaustion by the fears of the danger of pneumothorax. Most patients who come to the pneumothorax room are excited by the fear of the imagined pain that may accompany the induction of pneumothorax. Some are affected by the possibility of a pleural shock or other accidents that they are told about by their neighbors. If pneumothorax is properly administered it should give little or no pain. So-called pleural shock, which is rarely fatal, occurs so infrequently that it may be dismissed from one's fears of the treatment. It happens in the most experienced hands but can be minimized and placed in the realm of things that happen once in a "blue moon," if strict attention is paid to the technic of giving the pneumothorax. These are the immediate accidents to pneumothorax and the ones with which the patient seems most concerned. Other complications and accidents may occur but are not so sudden in their occurrence and therefore not so dramatic; consequently they fail to impress the patient.

The principle of pneumothorax is the one underlying all forms of collapse therapy; namely, the bringing about of relaxation of the diseased portion of the lung by the introduction of a layer of air between the lung with its immediate covering and the lining of the chest wall. In other words, pneumothorax is the introduction of air into the pleural space, which is that potential space which exists between the two coverings.

How is relaxation of the diseased portion of the lung obtained when air is introduced? Normally there is a cohesive force which holds the lung out to the chest wall. When air is introduced this force is broken, and the lung, because of its natural tendency to contract, recedes toward the heart region, or the mediastinum. The tendency for normal lungs to contract is bound up with the same tendency to reexpand.

When a portion of the lung is diseased this tendency to reexpand is partially or wholly lost, and therefore the diseased portion of the lung tends to remain collapsed while the nondiseased part continues to expand. It is for this reason that it is possible to obtain a collapse of the diseased area of the lung in the majority of cases, especially when adhesions are absent.

The introduction of air into the pleural cavity consists of drawing the outside air through a special apparatus and injecting it through a special needle which is inserted into the chest between the ribs. After the initial pneumothorax the amount of air injected is determined by fluoroscopic observations, especially with reference to the degree of collapse of the lung already present, the effect on the cavity and the stability of the mediastinum. As a general rule, preference is given to small quantities administered frequently, because it has been found that this method results more often in collapse of only the diseased portion of the lung. The first injection of air, or the initial pneumothorax, should always be a small quantity. Large quantities of air may result in pain and shortness of breath because of the sudden disturbance of the normal equilibrium in the chest.

Of the complications that follow pneumothorax the most frequent and most troublesome is the presence of adhesions. These are sometimes exceedingly diffuse, and consequently the two layers of pleura are so adherent that they prevent the entrance of air into the pleural space. When this condition is encountered the patient is known to be one who cannot take the air treatment. Fortunately this group is not large; but even in those cases in which a pleural space is found, adhesions are usually present which in many instances interfere with an effective collapse of the diseased part.

Another complication is the formation of fluid in the pleural space. It has been said that at some time during the course of pneumothorax treatment, fluid develops in practically every case. The fluid in the chest may be of advantage as well as disadvantage to the successful management of pneumothorax. The only real danger of fluid is that at times it turns into pus; but even when this occurs the outlook is not always bad because there are methods of attacking this complication which often result in cure. Again it should be remembered that fluid turns into pus rather infrequently, as noted in one sanatorium in about five out of every hundred cases. Occasionally either because of the damage by the needle or the tearing of an adhesion, a rent is formed, and the partly collapsed lung is then suddenly and completely collapsed. Occasionally too a small hemorrhage may take place following pneumothorax, and this, as a rule, is due to a small tear in the lung produced by the needle. Both these accidents are rare and as a rule respond favorably to treatment.

I am not attempting to minimize the accidents and complications that *(Continued on page 857)*

William Gropper

"The Hypochondriac"

How restricted is the life of a patient with heart disease?

Ewing Galloway

THE HEART, constantly pumping; increases or decreases its action with the varying activity of the body. The greater the bodily activity, the more forcefully does the heart work. The heart has a tremendous range of adaptability in response to this need. Under intense effort such as is involved in a 100 yard race, the pulse rate may jump from 70 to as high as 200 beats a minute. The amount of blood pumped out by the heart may be tripled. Yet it is impossible to overstrain the normal heart. Other parts of the body give way first. The muscles flag so that the patient collapses before the heart is called on for its last ounce of

By ERNST P. BOAS

effort. In other words the heart has a tremendous reserve power that may be called on to meet the extraordinary demands placed on it.

In the presence of heart disease this reserve power of the heart, this ability to pump more blood in response to bodily effort is curtailed. In the earlier stages of cardiac disease the heart can take care of the efforts involved in the activities of everyday life but can no longer respond to the greater strains, such as, for instance, arise from participation in active sports. As the heart disease progresses the ability of the heart to respond to loads placed on it gradually diminishes. Its reserve power becomes smaller, and finally in the later stages of heart disease it can no longer carry on an adequate circulation, even when the patient is at rest.

The heart announces overstrain and fatigue by giving rise to certain symptoms. The most important of these are shortness of breath, palpitation and pain in the heart region. The amount of effort required to provoke these symptoms is the gage of the reserve power of the heart.

But it must be remembered that these symptoms of shortness of breath, palpitation and pain may also occur in nervous disorders of hearts that are otherwise normal. One must not too readily jump to the conclusion that such complaints mean heart trouble. In such patients the symptoms are out of all proportion in their intensity to the changes found in the heart. Only a careful medical examination will reveal whether these symptoms are due to organic disease or to a nervous heart.

If the patient with heart disease can carry on without any symptoms, his cardiac reserve is excellent and his activities need not be curtailed. If certain efforts, such as climbing stairs, sweeping or carrying heavy parcels give rise to discomfort or induce undue fatigue or if the patient is exhausted in the evening after his round of duties, he is overstraining himself and his heart. The patient must learn to regulate the amount and vigor of his movements to a point below that which will give rise to symptoms. If climbing two flights of stairs brings on shortness of breath, he should, if he must ascend two stories, rest after the first flight, so that the second one can be negotiated without discomfort.

Patients with damaged hearts need not be chair-ridden invalids. Rest is certainly better than uncontrolled exertion; but measured and regulated bodily activity has positive physical as well as psychic benefits. Although the movement of the blood finds its origin chiefly in the ~~cardiac muscular~~ pump, the regulation of the circulation is determined by many additional structures, such as the smaller arteries, and the action of the muscles of the body in milking the blood in the veins toward the heart.

It is a matter of common knowledge that physical training enables a normal individual to undergo severe bodily exertion with greater ease and efficiency. While there is no thought of making a trained athlete out of a patient with heart disease, a certain amount of well tolerated activity will make the circulatory apparatus a more efficient machine, will spare the heart a certain amount of work and promote a general sense of well being. It will also help to prevent obesity, which so often follows a too sedentary life and adds to the burden of the heart.

One must aim to maintain physical fitness without permitting too strenuous activity. Sudden spurts of effort, as in lifting heavy objects or sprinting to catch a train, are particularly dangerous, for they may induce acute heart failure. Similarly all competitive sports in which the sense of rivalry makes the participant forget his fatigue and drives him to greater efforts should be avoided. Indeed, the only safe universal exercise is walking. Tennis, handball and similar violent sports naturally are out of the question. It is my belief that most cardiac patients are better off not playing golf, although, of course, there are exceptions. Swimming too is inadvisable, although bathing and taking a few strokes are usually harmless. Dancing places a much greater strain on the heart than is generally recognized. It is not unusual for the heart rates of normal persons to rise to between 120 and 150 after three or four minutes of dancing. Children with heart disease may not run, play baseball, roller skate or ride bicycles. The average child keeps his body fit by his incessant activity, and these activities should be reduced to a reasonable level without making the child too unhappy or introspective.

Stair climbing is traditionally a great bugaboo to the patient with heart disease as well as to his physician. Stairs are not nearly so dangerous or harmful as some persons suppose. Patients with good cardiac reserve may climb stairs, if they walk slowly and if they rest on the way when necessary. It does not harm them. Of course, running up, two steps at a time, may provoke serious damage. Whether a patient with heart disease may drive an automobile depends as much on his temperament as on the condition of his heart. Driving without ~~haste and rush is not~~ harmful.

The cardiac patient must acquire an unhurried free activity and with it a sense of leisure. It is the everlasting rush from one place to another, from one task to the next that causes undue strain. It is usually necessary for the

patient to recast his whole outlook on life, for emotional stress also overstrains the heart.

Most patients with heart disease are better off if they continue at work. The degree to which they can do so depends on the amount of their cardiac incapacity and the nature of their work as well as on their own temperament and on that of their employer. Complete retirement, particularly when it is made possible by an insurance policy for total and permanent disability, has a most demoralizing effect. The patients learn to live just for their hearts and become apprehensive and self centered. It is doubtful how much such a sheltered existence contributes to the extension of life, and it is certain that it does not add to the happiness of the patient or his family.

Those who labor at heavy manual occupations must, of course, change their work. Even if for the time being they can work without symptoms, the undue strain will certainly accelerate a cardiac breakdown. Factory workers who operate machinery usually can carry on without appreciable harm to themselves, if the conditions and hours of work are reasonable. These patients often report that they have no symptoms while at work but that, in a city like New York, the long subway travel to and from the factory causes distress. This handicap must be overcome by living close to the place of occupation or by allowing enough time to negotiate the distance in leisurely comfort.

Men who are in the more fortunate position of being able to control their hours of work can usually devise a daily schedule which they can carry without harm to themselves. This involves shortening of hours at business, arriving a little late and leaving a little early, with possibly a rest period after luncheon. A two or three weeks' holiday every four or five months is also helpful.

With children, the problem of school always arises. Most children with heart disease can participate in the regular school program without harm. But it will be wise to have them excused from every form of physical drill. A most difficult period is the early morning, when there is apt to be a rush in getting dressed and having breakfast and getting off to school. The home must be so regulated to avoid this. Stair climbing in schools is ordinarily well tolerated, but the teachers must understand the child's handicap and arrange that he is not rushed between classes. In large cities in which the public school system has become a vast machine with minimal consideration for the needs of the individual child, these adjustments may be difficult to make. In such cases it may be helpful to take advantage of the special cardiac classes, where they have been established, to take care of these children.

The dietary needs for individuals with heart disease, except in the presence of severe heart failure, are those of a normal person. There are no particular virtues, for instance, in a low salt diet. The chief danger is overeating, which leads to obesity. Often patients have so irrationally restricted their diets that symptoms characteristic of dietary deficiencies have resulted. Fluid intake should be restricted to not more than two quarts a day.

Coffee and tea owe their effects to the caffeine contained in them. Caffeine is an effective heart stimulant. Most subjects of heart disease tolerate coffee and tea well and may partake in moderation; that is, about two cups a day. Only when their use induces sleeplessness or palpitation should these beverages be stopped. Alcohol has no direct action on the heart. Taken in the form of spirituous liquors, it increases the pulse rate and blood pressure. Alcoholic drinks in quantities sufficient to produce exhilaration are best avoided, and immoderate beer drinking is unwise because of the excessive fluid intake as well as because it leads to obesity. Temperate drinking is harmless to people with heart disease. Indeed, in older persons, particularly when they are fatigued or tense, a glass of port or sherry promotes relaxation and is distinctly salutary in its effect.

No convincing evidence has ever been presented that the use of tobacco leads to heart disease, to hardening of the arteries or to high blood pressure. In rare instances, tobacco may induce cardiac pain and palpitation, but a true "tobacco heart" is seldom encountered. Excessive smoking should be avoided, but the daily consumption of one or two cigars or from five to ten cigarets is rarely harmful. Indeed, the sense of relaxation that accompanies smoking may be a benefit. Those persons in whom smoking gives rise to distinct symptoms must give up the habit. In certain diseases of the arteries of the arms and legs, smoking is distinctly harmful and must be stopped completely.

There is no doubt that the shelter and routine of married life are of benefit to the cardiac patient. But marriage does not concern the patient alone; it involves the marital partner and often children as well. In considering marriage the patient with heart disease must recognize that he is more susceptible to illness than the average mortal and that such illness may affect his relationship with his marriage partner, his economic status and the welfare of his children. In these cases economic rather than medical factors are determining.

Many young women with heart disease can bear children without damage to themselves. There is no general rule that will tell which cases are favorable. Decision can be reached only after careful study by a physician.

With intelligent regulation of activities by doctor and patient, most individuals with heart disease can maintain normal lives without further damage to their hearts.

U. S. Public Health Service

A BLOOD SAMPLE HAS JUST BEEN TAKEN FROM THE WOMAN'S FINGER TIP AND TRANSFERRED TO A GLASS SLIDE, HELD IN THE MAN'S RIGHT HAND, TO BE STUDIED FOR A MALARIAL INFECTION.

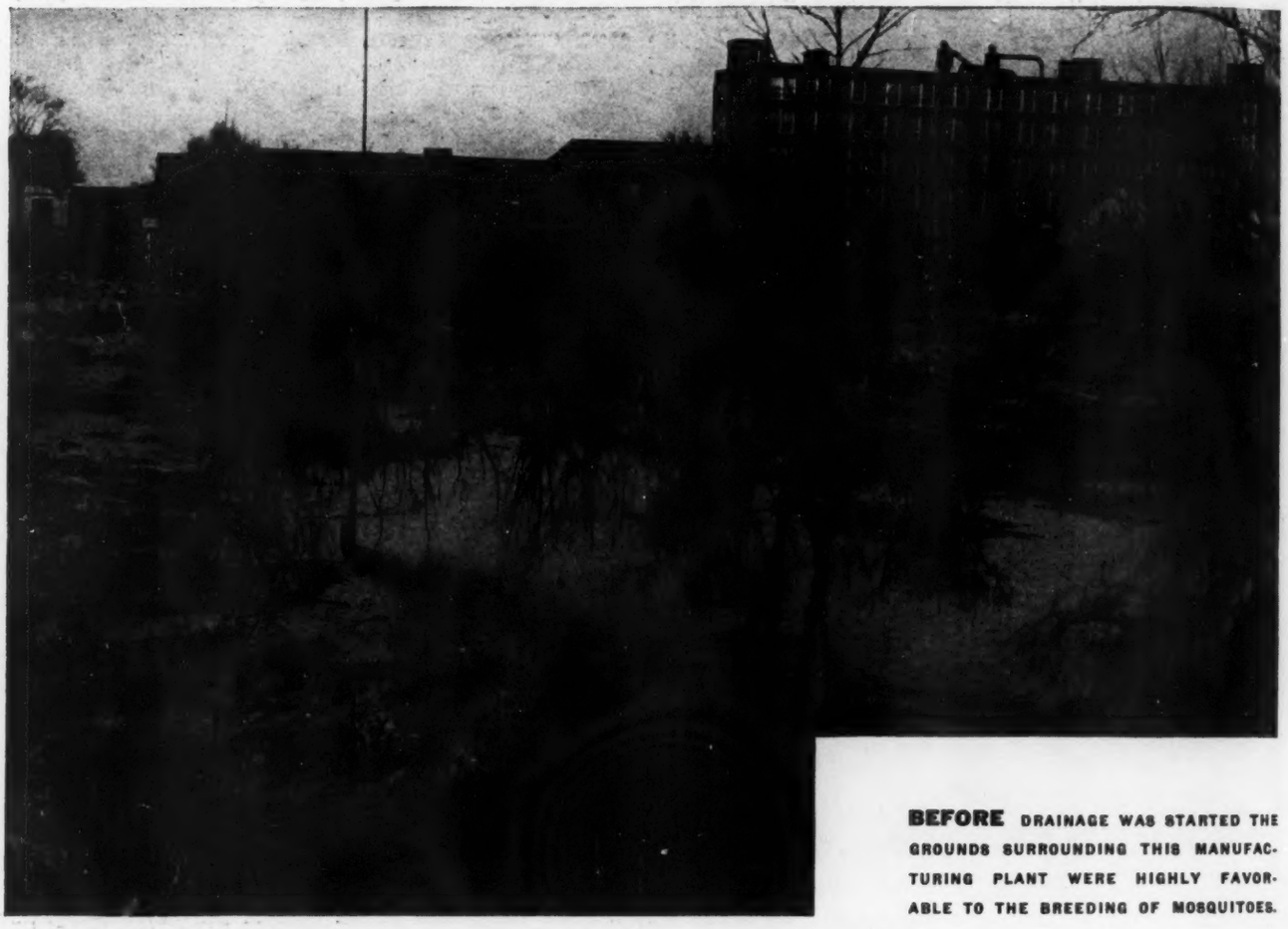
OF MOSQUITOES AND MEN: II

By FLORENCE PRYOR and A. W. von STRUVE

OF THE NINE Anopheles cousins, all of which can transmit the disease, but two play a large role in malaria. These two are Anopheles quadrimaculatus in the southeastern and southern states and Anopheles maculipennis in the western states between New Mexico and California. The other cousins prefer the woods and fields in different sections of the world. The two that haunt the settlements of men carry the bulk of the disease.

Mosquitoes pass through four stages of development, three of them in water. The three are the egg, the larva, or "wiggler," and the pupa stages. To develop from egg to winged adult the mosquito requires standing water—water that will be undisturbed for seven days, or longer, depending on the temperature. In its wiggler stage the mosquito consists of little more than a breathing apparatus attached to a stomach. The apparatus must periscope the surface of the water for oxygen, or the insect perishes. Thus a film of oil or poison serves to kill the wigglers and pupae. Fish of certain varieties make a meal of these stages; but in ponds with much vegetation the minnows cannot get at the wigglers, and in polluted streams there are no fish, for they have been killed off.

Malaria appears to cause the Anopheles no discomfort, though within her the parent malarial cells unite and produce great families. The developing malaria microbes pierce the stomach of the mosquito, encyst on its walls for a period and finally lodge in the salivary gland. There they await the fatal hour when the mosquito bites a human victim. Once within a human blood stream, they look for red blood cells, there multiplying enormously until the cells break. The enlarged malarial army attacks other blood cells, sometimes repeating the process within one victim for many years. Each



BEFORE DRAINAGE WAS STARTED THE GROUNDS SURROUNDING THIS MANUFACTURING PLANT WERE HIGHLY FAVORABLE TO THE BREEDING OF MOSQUITOES.

time the microbes break a set of cells the poisons they secrete cause their unwilling host to suffer violent chills and fever. Some of the parasites break the blood cells every forty-eight hours, causing tertian malaria, others every seventy-two hours, causing quartian malaria and still others irregularly, causing estivo-autumnal malaria. Some few of the parasites divide off into parent cells. These cells, sucked up by a mosquito, begin the life cycle again.

Over the years the human body builds up an immunity against the malarial organisms and gradually kills them off. A group population, too, builds up an immunity. As the immunity decreases, the rate of sickness rises. It works like the tides. In this nation the malarial tide rises to a peak every seven years, in Panama every two years. America suffered its last cyclic peak in 1935.

Science has not yet devised any adequate medical means for controlling the disease. Even quinine cannot completely kill off malaria in a victim. The drug decimates the microbes lodged in the skin and in the mucous surfaces but lacks the power to kill those in the internal system, particularly in the spleen. Infants in the South frequently have enlarged spleens caused by malarial infection. In fact, southern physicians regard malaria as a children's disease. When the WPA workers sought evidence on the spread of malaria, they examined school children. In certain areas they found as high as 95 per cent infected.

The best method yet devised for controlling malaria is eradication of mosquito breeding places. This also applies to the many pestiferous kinds of mosquitoes which do not carry malaria. Mosquito breeding places may be divided into permanent and temporary types. Under the permanent category are listed ponds, swamps, stagnant brooks and rivers, roadside ditches, open tanks, sewer catch basins, cess pools and cisterns. In the temporary category are placed barrels, tubs, discarded rubber tires, bottles and roof gutters. Russell W. Gies, an expert in eradication, believes that the temporary breeding places produce at least half the mosquitoes in most populous communities.

The relief workers cover both types of breeding places. Each project has its quota of larvicide spreaders. They use either light fuel oils or solutions containing an oil extract of pyrethrum. The latter, developed recently by a biochemist of New Jersey, is cheaper than oil. It doesn't hurt plants or injure water fowl and fish. During the breeding season the workers spray each water place once a week. This is no simple procedure. Some squads, armed with hand sprayers, wade through small streams to spread the larvicide. Some use small boats to

cover larger pools. Others operate power pumps mounted on scows, blowing a cloud of poison over the plant-filled margins of large lakes. Still others trail by foot through streets, spraying backyard barrels and gutters, fire buckets in manufacturing districts and gullies in suburban realty developments. Some, mounted on motorcycles, speed along the highways to spurt oil into sewer catch basins. In Tennessee an airplane releases great clouds of Paris green over the margins of giant reservoirs; boats spurt oil, and men with hand sprayers penetrate the little backwater eddies to clean out mosquitoes. All this spraying is supplementary to drainage.

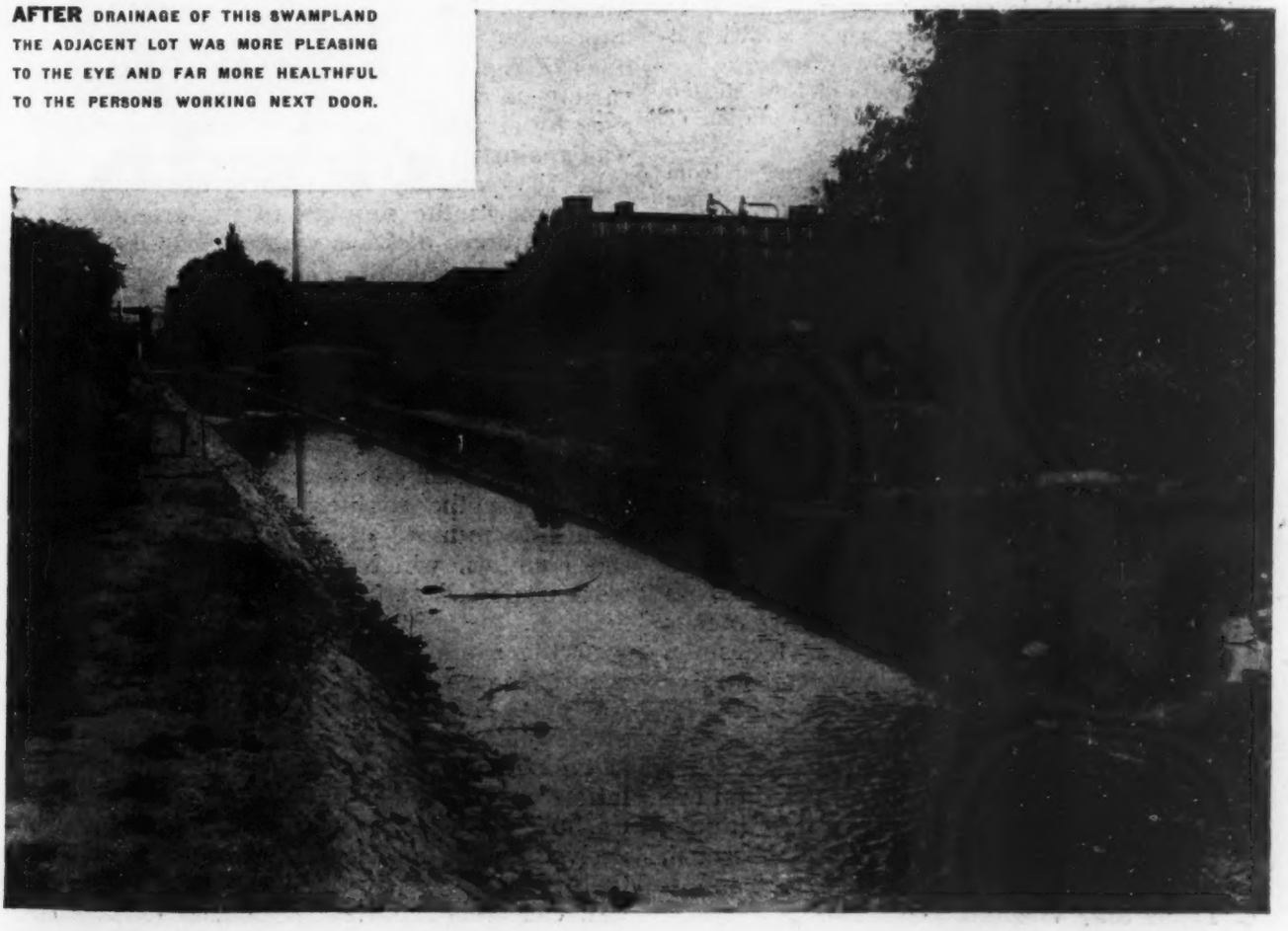
"Drainage is the basic element of control," declares one authority, who points out that extensive drainage pares down the problem to the point where spraying becomes but a small part of each season's work. Extensive drainage is expensive, however. Few but the richest and largest communities could afford it before the advent of the federal relief program.

In New Mexico, for example, malaria long had claimed the irrigated valleys. Along the entire Rio Grande basin and in the Mora and San Juan valleys it has infected approximately 30 per cent of the population and more during epidemics. Spanish conquistadores from old Mexico probably first brought the disease. Later on, Civil War regiments carried it into Dona Ana county, and most recently oil workers from Texas and Oklahoma took it into the northwestern oil territory. The carrier is Anopheles maculipennis, a hardy insect surviving rigorous winters and thriving in cool marsh waters and in drainage canals, as active at altitudes of 7,000 feet as at 3,500 feet.

The New Mexico program has three phases. The first is the location and cure of human carriers. For this purpose, the workers made studies of the prevalence of disease among children and adults. The second phase, the destruction of anopheline breeding places, involves drainage. The third phase provides for protection of the population from those mosquitoes which defy permanent control measures. The last phase includes spraying and oiling activities.

Of the three, the second phase is a job of "moving earth, digging ditches and filling swamps." In general, the relief workers confine control drainage to an area within the mosquito's flight range to human habitation. "Ditch digging, as simple as it sounds, involves many factors that need careful consideration." The New Mexico workers use the narrow-bottomed ditch to speed up water flow. This type of ditch becomes more nearly self cleaning than other types, according to C. A. Adams, assistant state

AFTER DRAINAGE OF THIS SWAMPLAND THE ADJACENT LOT WAS MORE PLEASING TO THE EYE AND FAR MORE HEALTHFUL TO THE PERSONS WORKING NEXT DOOR.



director of the program in New Mexico. He describes the work as follows:

The relief workers found original answers to the problems of winter operation. In Mora County, the ground froze eight inches deep, but the engineer in charge kept men working by turning water from nearby hot springs over his job at night; in the morning the ground would be thawed, and work progressed as usual. [In other counties, fires of logs and brush had to be started at midnight so as to thaw out the ground for the next morning's work.]

Preferring short ditches, well constructed, to many ditches that would not last through next winter, we have been generous in use of riprap, both rock and brush. Usually sufficient rock is closely available, either river boulders, malpais or volcanic rock, or sometimes stratified sandstone. Spanish-Americans are natural stone masons, a heritage of European ancestry kept keen in an environment where building timber is scarce, and they build beautiful rubble walls with any material at hand. One FERA ditch, riprapped with river boulders, has withstood two winters and two floods without losing a stone.

All curves in ditches are riprapped, sometimes only the outside wall, usually both. Every head wall for a flume or culvert is riprapped. Often it is necessary to riprap long stretches of straight ditch where washing might be serious. In many places rivers flow through valleys on beds considerably higher than surrounding country. Many small swamps which are below seepage level must therefore be filled. Where dirt is handy they are filled level with the surrounding country; where dirt is scarce they are filled only above the seepage line. The advantage of a fill job is its permanence without maintenance.

Highway and reclamation engineers of New Mexico have been nature's chief imitators in the creation of mosquito breeding areas. When dirt was needed for a road or canal embankment it was borrowed from the nearest place with no thought for drainage. Thus many deep borrow pits were made. Eventually these fill with cool seepage water, support abundant aquatic vegetation and make ideal mosquito breeding places. Due to the usual scarcity of dirt close at hand, some of the pits can never be filled. . . . In regard to costs, it is of interest to report that while project estimates were set up for 80 cents per cubic yard for hand excavation, the six months average was only 41 cents.

The operations protect 80,000 New Mexico citizens. The by-products of the malarial control program are extremely valuable. The filling-in of borrow pits and other holes serves to improve the highways. The water drawn from stagnant pools into the irrigation ditches means "life to the agricultural system" of the state. The program has helped to convert former swamp areas into fertile lands worth $2,346,417. It has also helped to control floods. The drainage structures serve as floodways. The other states in which such projects are carried on are Alabama, Arkansas, Florida, Georgia, Illinois, Kentucky, Louisiana, Mississippi, Missouri, North and South Carolinas, Oklahoma, Tennessee, Texas and Virginia.

The studies made in connection with drainage operations have produced significant results. Under the CWA, for instance, health workers examined 128,932 school children in the sixteen malarial states. Though the study took place in the winter months when malaria is at lowest ebb, 7,605 children were found to be suffering from the disease.

The Memphis study, a careful and exact scientific investigation conducted over a long period, showed clearly the close connection between malarial infection and breeding places. There one squad of workers set up mechanisms for catching Anopheles, periodically collected specimens and charted their presence in the district of the city. Nurses and various other medical workers checked through health records for old and new cases, then visited and examined each patient. They discovered that carriers frequently travel into Memphis from other places and that most of the resident infections were concentrated along the river-front closest to the Anopheles breeding places.

In Illinois a band of WPA workers sprayed millions of mosquitoes with a mixture of flour and cheap dye. The Des Plaines project has collected important information on the flight range of mosquitoes and on their flying habits.

The TVA malarial control project has served as a gigantic experimental station. The health experts who direct the activities there found Anopheles breeding soon after waters were impounded. The TVA workers clear the shorelines of the dams and spread Paris green and various oil mixtures by hand, by power boat and even by airplane. They have fought a winning war against Anopheles, it is reported.

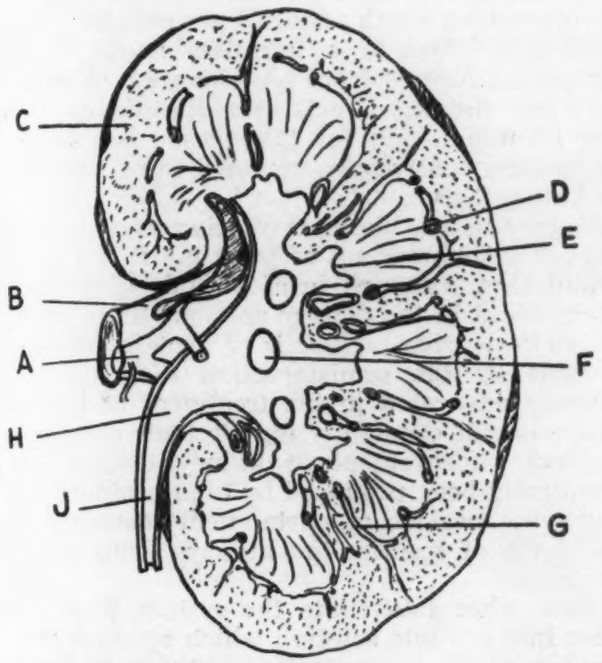
In 1934 and in 1935 there was a marked reduction in the number of malaria cases in those southern districts where mosquito control had been carried on. There was a corresponding increase in the districts which had provided no control. Within each state the "mosquito control" counties reported decreases and the others increases. Such contrasts appear, for instance, in reports from sixty-five counties in Mississippi, Arkansas and Tennessee. They show up as clearly in Georgia's reports for 1936. In Georgia the southern counties reported a moderate number of cases, while the northern counties, which had virtually no control work, reported almost epidemic proportions of malaria.

In the same way, various cities and towns reported large drops a year after mosquito control operations had begun. Las Palomas, one of New Mexico's former malarial strongholds, is typical. In 1933 virtually the entire population was infected. Then the project was set up. A year later, when the malarial season arrived, only one of each four persons stricken the preceding year was again attacked, and not a new case was reported. *(Continued on page 856)*

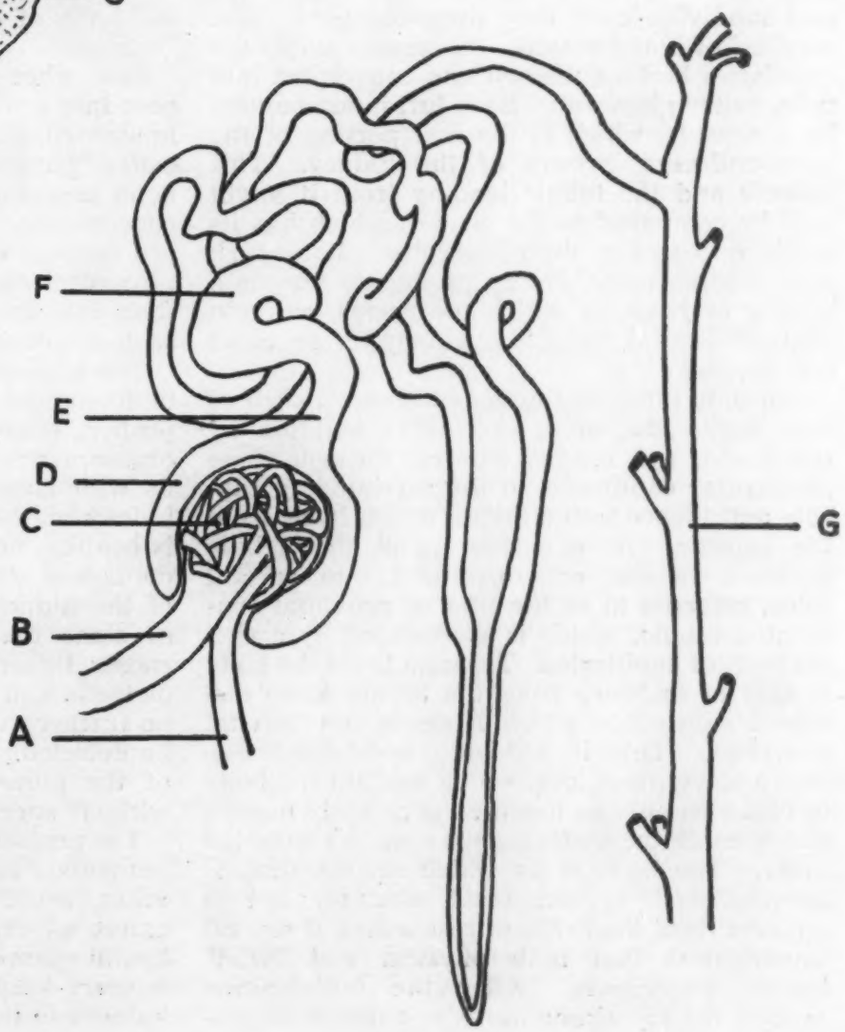
KIDNEY FUNCTION and DISEASE

By JAMES J. SHORT

UNTIL THE LAST QUARTER of a century the important subject of kidney function and disease was largely a matter of conjecture. Since that time great progress has been made in this field, and although some features are still obscure many positive statements can be made today with the full backing of scientific proof. There remain in the minds of many persons, however, certain traditional misconceptions and errors. Among these is the idea that all kidney disease is accompanied by pain in the lower part of the back; that the



THE LONGITUDINAL SECTION OF THE KIDNEY SHOWS A, THE ARTERY; B, THE VEIN; C, THE CORTEX, WHICH CONTAINS THE GLOMERULI; D, THE MEDULLA, WHICH CONTAINS LARGER TUBES LEADING TO THE KIDNEY PELVIS; E AND F, PAPILLAE; G, SMALL VEIN; H, PELVIS, COLLECTING URINE FROM THE ENTIRE KIDNEY, AND J THE URETER, WHICH CARRIES URINE TO THE BLADDER.



A PORTION OF THE CORTEX, SIMPLIFIED, SHOWS A, INFLOWING CAPILLARY; B, OUTFLOWING CAPILLARY; C, CAPILLARY TUFT; D, CAPSULE; E, TUBULE THAT CARRIES FILTRATE FROM BLOOD; F, THE CONVOLUTIONS WHERE REABSORPTION OF NEEDED ELEMENTS TAKES PLACE, AND G, THE COLLECTING TUBULE TO THE RENAL PELVIS.

kidneys must occasionally be stimulated by diuretics to increase activity, and that protein and salt are harmful because they increase the burden of the kidneys and thus tend to produce disease and early breakdown.

These ideas are almost wholly without foundation. Kidney disease rarely produces pain in the back; usually the earliest manifestation of kidney disturbance is the presence in the urine of such substances as albumin, blood and casts, which are detectable only by urinalysis. Since normal kidneys require merely such stimulation as occurs from the presence of excessive fluid and dissolved waste products in the blood, diuretics are not necessary. They are occasionally useful in certain abnormal states but should never be employed except under the direction of a skilled physician. "Patent" kidney pills and similar concoctions therefore are of more value as decorations for the shelves of the corner drug store than as remedies for supposedly ailing kidneys!

Before taking the allegedly deleterious influence of such substances as protein, salt and water into consideration, a brief survey of kidney structure and function might be helpful. Blood from the general circulation enters the kidneys through the renal arteries, which divide and subdivide until they form capillaries, the smallest of blood vessels. At certain points the capillaries become massed and convoluted into tufts, called glomeruli. Each tuft is surrounded by a capsule, which is the first portion of the urine-collecting system of the kidney. This capsule and the tubule leading from it might well be compared to the rivulet, which has its origin in a spring, the glomerulus. Many such tiny streams unite, finally producing the main stream or river, of which the ureter, or main channel leading from the kidney, is an exact counterpart.

Not only fluids but many substances, such as salt, sugar and urea, carried in solution by the blood, are readily filtered through these glomerular capillaries to the surrounding capsule and thence to the tubule which leads from the capsule. At a certain point this tubule becomes twisted or convoluted into several folds, referred to as the first or proximal convoluted tubule, which is surrounded by a rich network of capillaries. Through these the body is able to reabsorb from the tubule those dissolved substances which it needs for its vital processes. This is a highly specialized discriminatory procedure, which enables the body to reabsorb only as much as is actually needed and permit the remainder to escape into the urine. The method by which reabsorption is accomplished is somewhat obscure, but it appears from the brilliant researches of several investigators that both physical and "vital" factors participate. After the reabsorption process the remaining fluids and dissolved substances, not needed by the body, collectively make up the urine. They are conducted through collecting tubes and eventually discharged into the funnel-shaped ends of the ureters, or ducts, which lead to the urinary bladder.

In view of these well known facts about kidney function, exercise of the kidney tissue should be no more harmful than the exercise of brain or muscle tissue.

Urine contains a large number of substances in solution, of which about 70 per cent are urea and salt. Urea is a harmless nonirritating compound formed from proteins such as meat, eggs and cheese. It acts as a diuretic, or kidney stimulant, and for this reason has sometimes erroneously been assumed to be harmful to kidney tissue.

Kidney tissue, like that of other organs, consists of cells made up of protein. It has been found that, although brief periods of protein curtailment in the dietary are sometimes beneficial, to deprive such cells of protein for long periods by the semistarvation diets so frequently advocated in the treatment of kidney diseases will eventually impair their structure. Indeed, improvement in kidney disease has frequently been produced by high protein diets following periods of curtailment instituted in the hope of sparing the kidneys from excess "work."

Salt, when taken into the system, promptly goes into a dilute solution which approximates in strength the concentration of the body fluids, called "physiologic concentration." When there is an excess of salt or insufficient fluid for this concentration, thirst is experienced and fluids are taken. There is no more evidence that a physiologic salt solution damages the kidneys than that tears damage the eyes; and in fact such a solution is almost identical with tears.

The kidneys are so essential to life that it is understandable and desirable that they be given proper consideration. As with most vital organs, nature has been provident in supplying us with an abundance of kidney tissue. One kidney can be removed and, provided the other is healthy, no evil consequences will ensue. A damaging attack of nephritis, or inflammation of the kidney, may be sustained as the result of some remote infection, usually a streptococcus infection of the tonsils, throat, sinuses or teeth, and recovery may be so complete that no further evidence of kidney disease will ever be detected. The kidneys usually outlast most of the other vital organs of the body, even without special attention.

To protect the kidneys, one should give immediate care to all infections, eat in moderation, avoid excess of condiments or other extremes, drink ample fluids, have a periodic health examination, including a urinalysis, once a year, keep a serene mind and permit the kidneys to take care of themselves. They will!

Eye Physicians, Opticians and Their Work: I

By EDWARD JACKSON

[EDITOR'S NOTE.—Definitions of technical terms used will be found at the end of the article.]

GLASS was made in Egypt over 3,000 years ago. It was not clear glass, suitable for making window panes and spectacles. It was of various colors, used for making ornaments, beads and imitation jewels. About the year 1000 A. D., glass was made in Europe for stained glass windows of churches. Later, small panes of glass, to let light into houses, came into use.

ROGER BACON

Nero, the Roman emperor, had a concave emerald through which he watched the combats of his gladiators; and Pliny, the historian, suggested that all gems of that kind should be reserved for such use. Many ground and polished gems have been found in the ruins of Babylonia, among them a piece of rock crystal, ground to the shape of a convex lens of 10 inches focus, 4 diopters. Such a lens would help a lens grinder, who was losing his sight by age, to continue his fine work. There is no other evidence that lenses were used to help vision until about the year 1300.

The early history of the use of glasses to help vision is obscure and uncertain. Eyeglasses were at first much used as ornaments. There is, in Italy, a tomb bearing the inscription, "He invented spectacles." In Spain is another tomb with the same claim for the man buried in it. One of the first men known to make spectacles said he did not invent them but knew who did. It is probable they were invented by Roger Bacon. The exact time of Roger Bacon's birth is not known. Probably he died about 1292 or 1294. But it is known that he studied, taught and experimented at the University of Oxford and that he was a pupil of Robert Grosseteste, who had studied law, medicine and the natural sciences and was the greatest physicist of his time. Bacon became a friar in the Franciscan order. But because of his experiments he was accused of "black magic" and was banished from Oxford by the head of his order. He was sent to Paris and there was deprived of books, writing materials and opportunity for experiments. While he was yet in Oxford he had been visited by the papal legate, who in 1265 became Pope Clement IV. Thus the pope commanded him, "notwithstanding any injunction from his superiors," to write and send to him a treatise on the sciences. He sent to the pope in 1267 three large treatises and with them a glass lens which he had ground.

An old manuscript which he traced to Roger Bacon was found in 1912 by W. N. Voynich. This manuscript, written in cipher, was placed in the hands of Prof. William R. Newbold of the University of Pennsylvania, an eminent student of medieval cipher. In 1921, Professor Newbold reported to the College of Physicians of Philadelphia the results of his studies of the Bacon manuscript. From the drawings in his manuscript it is clear that Bacon had seen and described the spermatozoa of the dog and the nebula of Andromeda in the sky. This proves

that he had made a microscope and a telescope. Not knowing what Bacon had done, hundreds of years later the Dutch optician Leeuwenhoek made a microscope, and the Italian philosopher Galileo made his telescope.

At the time of Roger Bacon there were monks and copyists who devoted their lives to the writing and copying of books. It was two hundred years later that books began to be printed. In the British Museum there are more than 50,000 copies of hand written manuscript "books." Before printing was invented, every library, museum, university or monastery had its writers and copyists. Those who were not nearsighted became unable to see their work as they grew older. They were the ones who most needed the assistance that lenses could give and naturally were the first to use and appreciate the value of glasses for the improvement of vision. Among them the name of Roger Bacon was well known.

Trained gem cutters were ready to apply their skill to glass, the new material which was especially suited to being shaped to ornamental forms and applied to new uses. When the monks and copyists needed glasses, artisans quickly turned their skill to supplying glasses that would help them to see. Those who obtained help from such glasses told others about them, and there developed a demand for spectacles. Jewelers added spectacles to the ornaments they sold. The customer could look them over and choose those he liked best, just as he was allowed a choice of rings or other jewels.

Kepler, the mathematician-astronomer, had sight impaired from smallpox. In 1602 he disclosed why concave glasses help nearsighted persons to see at a distance and convex glasses help old, farsighted persons to see things close.

When Benjamin Franklin was 78 years old he needed glasses to read with and other glasses for seeing at a distance. He went to an optician and had a pair of glasses made, with both near and far seeing parts before each eye. The far seeing part was above and the near seeing part below. These were called "Franklin glasses," and they gradually came to be used by some people as they grew older. In this way the number of people who wanted glasses for improving vision increased. The makers and dealers who sold such glasses were called opticians. In small towns remote from cities the jeweler-optician is still the only person who sells spectacles; and in cities the ten cent stores still carry stocks of spectacles, from which the buyer may make his choice.

In the time of Roger Bacon, physicians were not interested in glasses to help vision. They were dominated by the authority of Galen, who knew nothing of optics and little about the eye. Eye diseases were treated by surgeons, most of the treatment being by operations. The Diary of Samuel Pepys reveals that he had trouble with his eyes. When he tried on glasses that seemed to help him he was warned that if he used them he would soon have to get stronger ones and would finally become blind. At the age of 37 he gave up keeping a diary to save his sight for his work as clerk of the admiralty. Thirty years later, when he wore glasses like other men, he was sent on an expedition to stop piracy in the Mediterranean and then kept a diary of his trip.

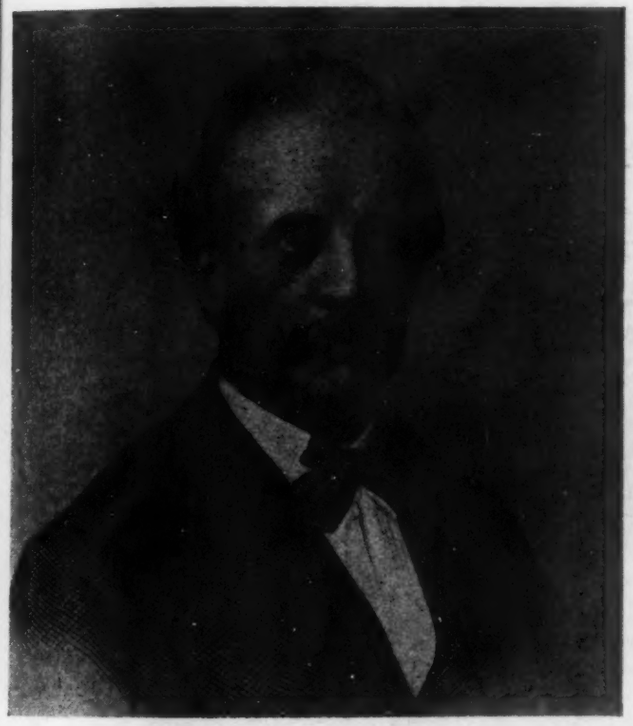
Thomas Young studied medicine in London, in Edinburgh and in Germany and graduated at the University of Goettingen in 1796. He had

BENJAMIN FRANKLIN

studied mathematics in the books of Arabian and Egyptian writers, and he studied the physiology of his own eyes. He explained the accommodation of the eye by changes in the form of the crystalline lens, and in 1801 he described the astigmatism in his own eyes and a method of measuring it. In lectures given as professor of physics in the Royal Institution he advanced a theory of color perception and color blindness. He resigned his professorship to keep up his practice of medicine. His lectures included suggestions of important scientific advances, subsequently worked out by others. In 1826 a young clergyman named Goodrich, while trying to get glasses for nearsightedness, found he had an astigmatism. He worked out its amount and meridians by the method described by Dr. Young and wrote to a

Philadelphia optician, McAllister, to ascertain whether glasses could be made to correct the defect. McAllister took the letter to Dr. Isaac Hays, one of the first surgeons appointed to Wills Hospital. Dr. Hays told the optician it could be done and how to do it. The lenses were made and sent to Goodrich, who wore them for many years. This was the first pair of lenses worn to correct an astigmatism.

The astronomer George B. Airy, professor of mathematics at the University of Cambridge, England, when looking at a star with one eye found that he saw it as a point of light, as do most persons with good eyes. But with the other eye it appeared as an oval blur. He calculated the form of cylindric lens that would correct this defect, and an optician in Norwich made it for him. His colleague, Prof. William Whewell, suggested that the defect should be called astigmatism. Dr. Hays, Dr. Goode and others reported cases of astigmatism. It became recognized as another defect of the eye to be corrected by glasses, and Professor Stokes of Cambridge suggested a combination of cylindric lenses by which it could be tested and measured.



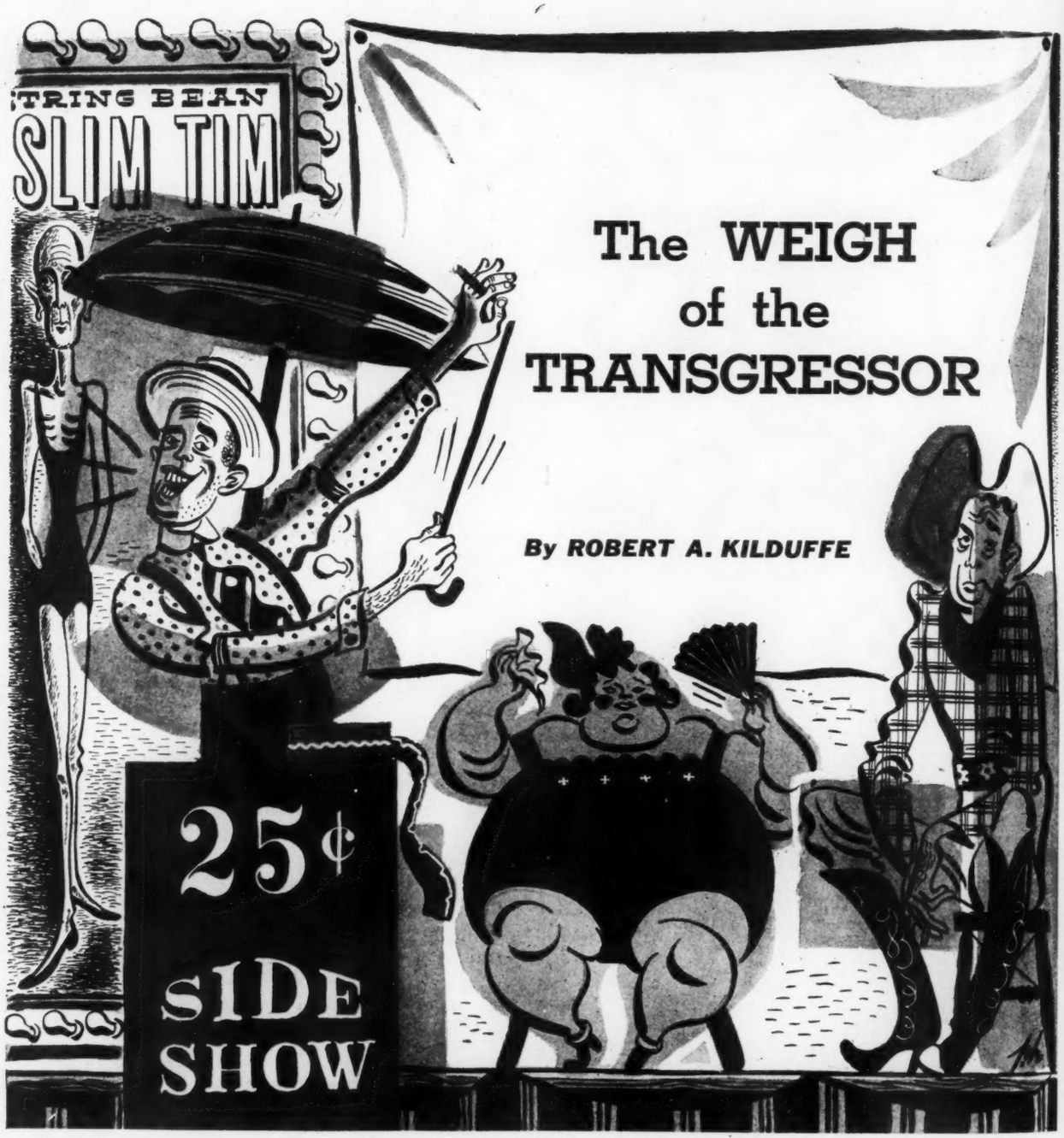
HERMANN von HELMHOLTZ

Helmholtz, a surgeon in the Prussian army and professor of physiology in the medical school in Koenigsburg, invented the ophthalmoscope, by which the interior of the living eye is studied, and the ophthalmometer, with which the curves of the cornea and the crystalline lens may be measured. In 1856 he began to publish his "Handbook of Physiological Optics," which has grown to three volumes of 1,740 pages. In 1864 Donders, professor of physiology and ophthalmology in Utrecht, published his work of 654 pages on "The Accommodation and Refraction of the Eye." He dedicated it to William Bowman, the anatomist, physiologist and surgeon, who gave up other branches of practice to confine his work to the study and treatment of the eye. Although Donders lived in Holland his book was first published in the English language. It appealed strongly to the practical sense and interest of English speaking peoples. It explained the mathematics, optics and anatomy of the anomalies of refraction, and it also pointed out their connection with strabismus, headache, nervous diseases of many kinds and general diseases such as diphtheria.

After Dr. Young had called attention to the optical defects of the eye, the medical profession began to pay more attention to them. The astigmatism in his own eyes he considered normal, because it caused him no trouble. It might be normal for sailors, trying to see the masts or smoke of a ship on the horizon, or for plainsmen, trying to see cattle or enemies on the plains. It had been supposed before that any one who could see things at a distance had good eyes. But it became evident that even slight defects in the focus of the eye might be a serious handicap for any one who had to use the eyes much for near work, such as reading, sewing and many kinds of fine mechanical work. Examination of large numbers of people, especially thousands of school children, soldiers and railroad trainmen, has shown that many of those who see well at a distance are handicapped for near seeing. Only a few have perfectly formed eyes fitted for easy seeing, both at a distance and near.

Up to one hundred years ago no one supposed that every child should learn to read and go to school. Moving pictures and their use to amuse or educate people had not been thought of. Now there are laws for compulsory school attendance, and every child between certain ages is expected to be in school five days a week, several months of the year, reading books a large part of each day. The watching of moving pictures is the most general recreation for the evenings. Eyes that cannot do these things easily are a cause of nerve strain and general poor health. The discovery of these things attracted the attention of physicians and revealed a great need for lenses to correct the small, optical defects of the eye.

The massing of population in towns and cities compels the employment of a great number of workers in workshops, factories, stores and office buildings, where there is less light on their work than outdoors. There are many more old people now than there used to be. One hundred years ago *(Continued on page 855)*



The WEIGH of the TRANSGRESSOR

By ROBERT A. KILDUFFE

"OH, THAT this too, too solid flesh would melt!" cried Hamlet; and enough people seem to be repeating the idea, if not the words, after him to account for the expenditure of nearly a million dollars a year for "reducing."

Unfortunately, solid flesh will not melt away for the wishing, and thereby hangs a tale.

Politeness, if not diplomacy, suggests that there are no fat ladies (though, perhaps, some few might be a little overweight), but fat men abound in history. For instance, there is said to have been born in Georgia about 1778 a man who reached the height of 7 feet 8 inches and a weight of 1,000 pounds! He may have been apocryphal as also may have been the story of Denys, the tyrant of Heraclea, who was so fat that needles were placed in the back of his throne to prevent his falling asleep and suffocating in the midst of his quadruple chins; or Alexander's son, Ptolemy, who was unable to walk unless supported on either side. The tabloids of his day did say that, when full of wine, he was able to dance with abandon if not with grace—but that is beside the question.

These gentlemen may have been legendary, but there was nothing legendary about Daniel Lambert. Born in 1770 in Liecester, England,

Daniel, while at first merely chubby, soon grew to be downright fat; at 14, he weighed 170 and at the age of 23 attained the very respectable weight of 443 pounds. At this time it is gravely related that he became somewhat sensitive about his weight but not sufficiently so to do much about it for, when 39, he weighed 779 pounds and measured 3 yards around the waist and a mere yard around the leg.

Nor is there anything legendary about the Italian lad in Philadelphia who is today so fat that, probably because of lack of imagination on the part of the builder, he has not been able to leave the house for the past five years.

What makes people fat? If you ask a lady who is, let us say, just a little plump, she will probably reply that it can't be what she eats because every one will tell you that her appetite is positively birdlike! Her Aunt Emily believes that it is hereditary; but she has heard that doctors think it has something to do with glands.

If this purely hypothetic female is somewhat remarkable she may also say, "Oh, well, what's the difference! If I'm going to be fat, I'm going to be fat, so I might as well enjoy life as I am." If she is an average woman she will bemoan the styles and fashions and, as likely as not, expend most of her allowance on "reducing." Even if you disregard the terrific combat always going on between fat and fashion, being fat—or obese, if you want to be technical—does make a difference, as those overweight who have tried to secure insurance have learned.

Insurance companies define overweight as weighing 20 per cent more than the average for your age, sex and height; and when it comes to computing premiums they regard such individuals with a somewhat jaundiced eye as a result of certain side remarks of their statistical departments. So it becomes of some interest to find out why and how people become obese; but before that question can be answered another must be asked: What is obesity?

Obesity is simply an exaggeration of the normal processes of fat storage, and while it may be somewhat difficult at times to determine when normal storage passes over into excessive storage, in either instance the process is related to the balance, or lack of balance, between the caloric intake and the caloric output expended as energy. For, in the last analysis, it all comes back to the principle that all energy produces heat and hence requires combustion. The fuel of the body is food, and the individual who maintains an adequate balance between food intake and food combustion is not apt to become fat.

It is by no means a figure of speech to think of the human body as a machine, and a very complicated piece of machinery at that. Its innumerable tissues must all be fed; and as the innumerable mechanisms they compose expend much energy in their various functions, a good deal of fuel is required to keep them working. Moreover, as a precaution for extra demands and to serve as a reserve for unforeseen emergencies, a certain amount of fuel is stored as a reserve to be called on when none is otherwise available. This reserve is stored as fat, and in the normal individual approximately one sixth of the body weight represents stored fat. In a normal man weighing 154 pounds, about 26 pounds therefore consists of fat, having a potential combustion value of 80,000 calories, or enough for the total energy output for about one month.

The human being, therefore, in a small way does just what the bear does when preparing to hibernate. For, as every one knows, the bear goes into his winter cave as fat as he can possibly become and comes out in the spring as thin as a rail, having lived all winter on the body fat he stored for that purpose.

Despite the numberless concoctions of the chef and the fact that cookbooks may be very respectable tomes, there are only three kinds of foodstuffs, three kinds of human fuel: fats, proteins (albuminous substances) and carbohydrates. All of them are essential to health, and all three are burned in the body to supply energy, whether expended in playing football or in knitting or whether required for the normal processes of tissue growth and repair. Even when we are asleep, energy is being expended by the heart beats, the expansion and contraction of the lungs, and the continual hidden work always being done by the organs and tissues of the body.

All this means combustion, and combustion means fuel which is supplied by the food we eat. The most easily burned fuel is carbohydrates, and the flame in which they are burned is supplied by the fats. Under normal conditions and with a normal balance between

the three kinds of foods, together with a normal balance between intake and energy expenditure, there will be little, if any, excess in any direction. If the energy expenditure is greater than the fuel intake, the deficiency is made up from the stored reserve and, should this be exhausted, then from the body tissues generally. When the reverse is the case there is an excessive storage of fat far beyond that normally required as a normal reserve supply of fuel.

Improper balance between the different foodstuffs also leads to excessive fat storage. Protein, for example, can be converted into either fat or sugar under normal conditions. When the intake of carbohydrates is excessive, protein is then stored as fat.

The depots for the storage of fat are the connective tissues of the body, as well as the omentum—an apron-like structure overlying the coils of intestine—and, in men, the tissues of the neck and abdomen, thus producing the well known "bay window" effect. In women, in addition to these areas, fat is also deposited in the breasts and the tissues of the thighs and abdomen.

It is unfortunate that a tendency toward abnormal fat deposit is more frequent in women than in men. There seem to be various reasons for this, some more or less hypothetic, others with more basis in fact. For example, it has been suggested that the frequent tendency of women to become overweight is atavistic in origin, reflecting the cave life of prehistoric ages when the female was more or less confined to the cave with her young while the male foraged for food. It does not require much imagination to appreciate that food supplies were often somewhat irregular, so that life was then mainly either feast or famine. The tendency to gorge when food was available, still a more or less common trait of savage tribes, was not merely gluttony but represented an unconscious effort to store fat to be called on later in time of food scarcity. The ability to store fat, though not at all appreciated by the women of today, was then a decided asset.

This explanation is, of course, purely hypothetic, and other and perhaps more likely explanations have been advanced at different times. Thus the life of women in general tends to be somewhat less active than that of men; they have greater and more frequent opportunities, as housewives, to eat between meals; and, because of pregnancy and the phenomenon of the menopause, or change of life, they are somewhat more liable to disturbances of the endocrine glandular system. The last assumption does not always carry great weight for, while the endocrine glands may be a cause of obesity when their function is seriously disturbed, this is a relatively rare occurrence and by no means a frequent cause of obesity.

Nor is heredity a cause of much importance. In fact, there is grave doubt that heredity is a cause of fatness at all. There are undoubtedly families the majority of whose members tend toward overweight, but probably not so much because of heredity as because of their familial habits of diet. Such families are usually, if not invariably, known as "hearty eaters," and—the horrid truth might as well be told without more ado—man becomes fat when he consistently and habitually takes in more food than his energy requirements can utilize; to be blunt about it, when he overeats and makes a habit of it.

But how about the fat people who maintain with vehemence that they eat hardly anything at all? We'll come to them shortly.

And those who eat and eat and yet never seem to grow fat? Well, in most instances these are people whose general activity is such that their food intake just about balances their energy requirements, so that caloric intake and energy output are about equal. In other instances, though this is not commonly the case, their failure to gain weight is sometimes due to some minor irregularity in the function of the ductless glands, though the nature of the irregularity is not always clear or known.

The ductless glands come into the discussion of obesity so often, either as a cause of pathologic obesity or, much more frequently, as an easy "out" for those unwilling to contemplate the hardships of dieting, that they must at least be mentioned.

In addition to being spoken of as the ductless glands, they are also known as endocrine glands and glands of internal secretion because, unlike the other glands of the body, their secretion is not poured out through a definite channel, or duct, but is absorbed directly into the blood stream by the small blood vessels which surround them and enter their substance. Among the structures so named are the pituitary gland, which lies deep within the skull beneath the brain mass; the adrenal glands, which are found directly above the upper pole of each kidney, and the thyroid gland, which is to be found in the front of the neck. There are others, but these will suffice as examples.

The adrenal glands are extremely interesting and important structures with marked and varied influences.

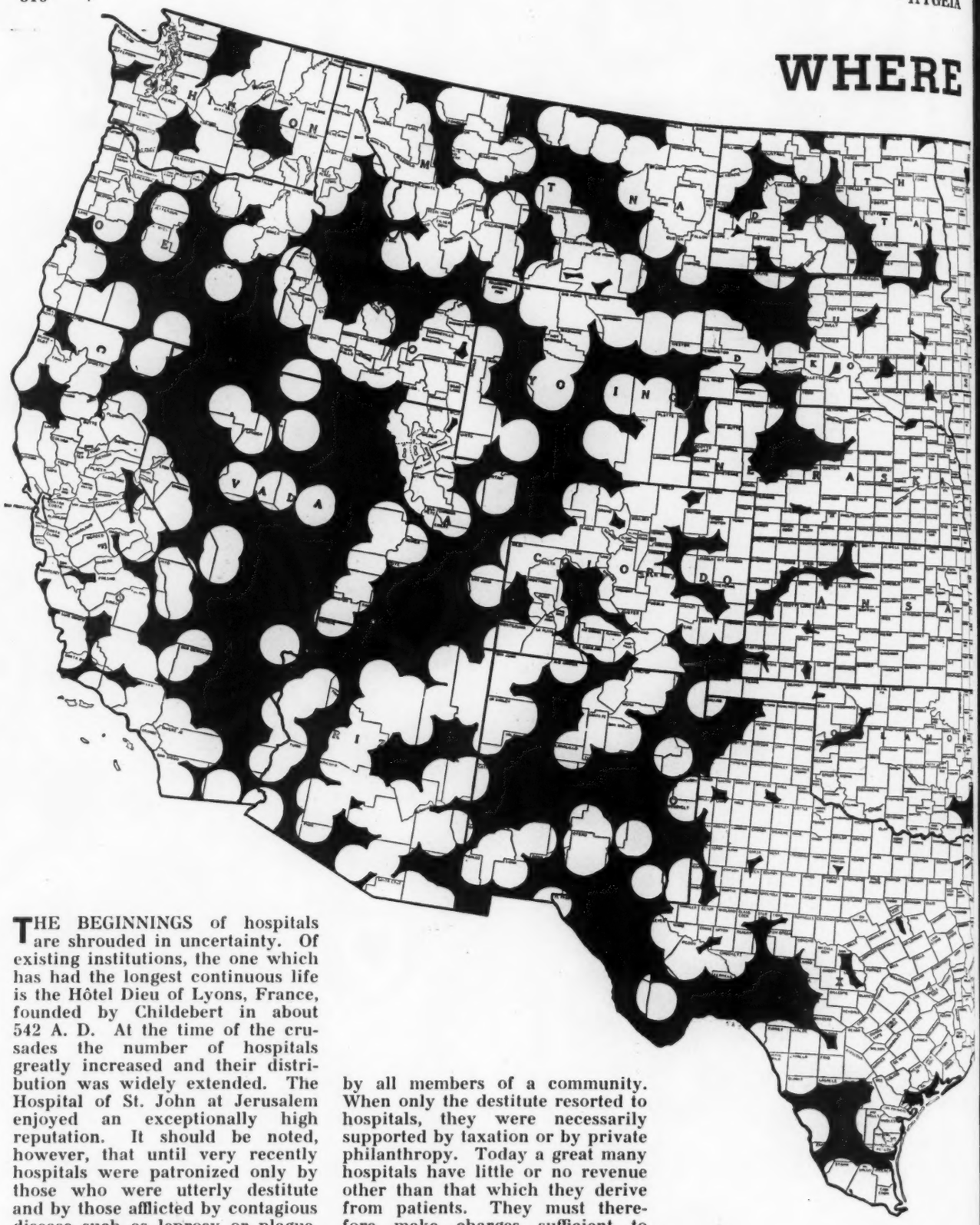
The pituitary gland, in some mysterious fashion not entirely understood as yet, acts as a regulator of bone growth, and when this regulating mechanism is disturbed the result may be a peculiar disease known as acromegaly, in which the bones of the hands, feet and face become disproportionately enlarged. Sometimes the excessive growth involves also the long bones, those of the extremities. Such individuals are often found as "giants" in sideshows or circuses. *(Continued on page 843)*

COUPLETS on the POWER of SILENCE

"It works with John—why not with little Jack?
If I talk forward, how can he talk back?
'Tis true, he often screams to have his way,
But I'll outscream him. Jackie shall obey!"
Ah! then what futile clamor rends the air
While Jack turns mamma's hope into despair!
Shrill mamma threatens, bargains and cajoles;
Skilled Jackie pricks her ego full of holes.
He flops upon his back. She's scared to death!
O tried and true expedient!—holding breath,
Breath of which Mother is so prodigal,
Her tyrant offspring will not yield at all!
So, strangely, like the Pharisee of old,
Does her much-speaking leave her hearer cold.
Out of the mouths of babies is strength ordained—
How often parents have that Writ profaned!

By PARK J. WHITE Jr.

WHERE



THE BEGINNINGS of hospitals are shrouded in uncertainty. Of existing institutions, the one which has had the longest continuous life is the Hôtel Dieu of Lyons, France, founded by Childebert in about 542 A. D. At the time of the crusades the number of hospitals greatly increased and their distribution was widely extended. The Hospital of St. John at Jerusalem enjoyed an exceptionally high reputation. It should be noted, however, that until very recently hospitals were patronized only by those who were utterly destitute and by those afflicted by contagious disease such as leprosy or plague. Persons with either money or friends shunned the hospital as a pest house, which it often was.

The introduction of aseptic surgery, little more than half a century ago, marked the beginning of a new era in hospital service, characterized by the fact that hospital care is now regarded as indispensable by all classes of society and by all members of a community. When only the destitute resorted to hospitals, they were necessarily supported by taxation or by private philanthropy. Today a great many hospitals have little or no revenue other than that which they derive from patients. They must therefore make charges sufficient to cover operating costs at least.

In the United States during the last thirty years, hospital facilities have steadily increased, in response to demand, at a net annual rate of 25,000 beds. Mental hospitals account for more than half of the beds in the country, but forty-seven times as many patients are admitted to hospitals of other types. The geographic distribution of hospitals is clearly indicated in the accompanying map. Around general hospitals, circles have been drawn of 30 mile radius, and all areas outside these circles are shown in black. Obviously, the map is black in those regions where the population is least. Less than 2 million people

ARE OUR HOSPITALS?

By WILLIAM D. CUTTER

Distribution of Hospitals in the United States

THIS MAP OF THE UNITED STATES SHOWS IN WHITE ALL AREAS WITHIN 30 MILES OF A HOSPITAL, AND IN BLACK ALL AREAS NOT WITHIN 30 MILES OF A HOSPITAL; 98.5 PER CENT OF THE POPULATION OF THE UNITED STATES LIVES WITHIN 30 MILES OF A HOSPITAL.

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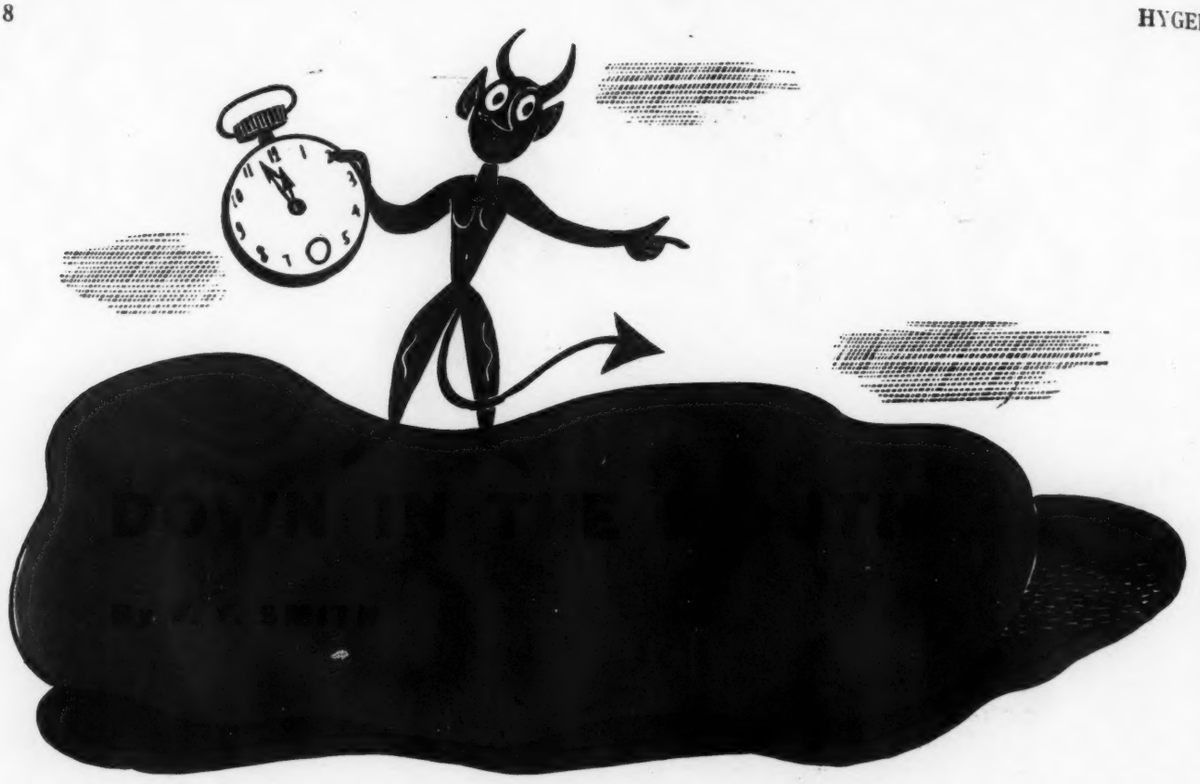
live more than 30 miles from a hospital.

Furthermore, it can be shown that those states which are most densely populated and which have already the most extensive hospital facilities, as measured by the ratio of hospital beds to population, are the states in which the hospitals are most fully occupied, 70 per cent or more. On the other hand, in eight states, sparsely settled and with a low ratio of hospital beds to population, 40 per cent or more of existing hospital capacity is unused.



MIDNIGHT. The hour when ghosts clank their chains, conspirators hold secret rendezvous, eloping couples flee from parental wrath, the solitary figure slips silently along the deserted street—and teeth start to ache.

How sweet that first hour of repose, and how unmerciful the awakening! It seems but a moment or two since your head touched the pillow. Must teeth always hurt at night? Is there a law? Why couldn't they begin their unholy throbbing in the daytime? But no, probably that legion of little demons, who with their picks, their buzz-saws and their flaming furnaces inhabit your tooth, work only at night. They wait patiently until you are deep in slumber; whereupon their leader, obviously a fellow with Machiavellian talents, lets loose a blast from his bugle which rings in your ears and then yells to his followers, "All right, boys, he asked for it. Let him have it."

But did you ask for it? You certainly did.

Few toothaches ever burst, Vesuvius-like, on their victims without preliminary rumblings and even a little fire and smoke. But you, like the residents of Pompeii, refused to take heed. A few weeks ago you had a slight twinge which annoyed you for a little while but soon stopped. Some days later it returned, a little more insistent this time, so you mentally made a note to see about it. Of course you forgot about it as soon as the pain quieted down, which it did very soon. There wasn't any more trouble then for almost a week, when you received a severe warning that all was not well with your oral chinaware. On this occasion you came within an ace of making an appointment with your dentist, but when you actually got around to telephoning him the pain had again departed. The tooth felt quite comfortable; so you said to yourself, very easily, "It's nothing. Just a trifle. It probably won't bother me any more."

That was just ten days ago. This evening when you went to bed you had no more premonition of disaster than did the Persian Army before Marathon in 490 B. C. But now look at you, pacing the floor while that tooth tries grimly to force its way out through the top of your head.

What to do? It's no good to remind you that you had plenty of time to see your dentist before. What are you going to do until you can get to his office? While the rest of the family is trying to reach him on the phone and ask him to get up and open his office in order to save a man's sanity, let's see what's making your tooth ache and what can be done to stop it.

Open wide now. Which one is it? Oh, that one. That's a biscuspid, and it has a large filling in it. Does it feel long? Does it hurt when you bite on it? It does? Then the chances are that you have an abscess. Try some cold water in your mouth. Yes, that's right, *cold* water. Careful now, not all at once. Hold the water around the tooth. It seems to ease it? Fine. Try some more. Yes, I know you wanted your wife to get the hot water bottle. But if you had applied heat you would probably have caused the entire side of your face to swell up. Feeling better now? Keep on using the cold water while I tell you about toothaches.

Your tooth is hurting because of pressure. Inside under that large filling, the nerve or, as dentists call it, the pulp, has died. Maybe the

filling was placed too deep without an intermediate layer of insulating material. Metal fillings are good conductors of heat and cold, and any change in temperature is easily transmitted to the pulp. If there is no nonconducting material to protect the pulp this constant irritation will cause it to die. That happened when you got those warning signals several weeks ago. But maybe the filling wasn't the cause of the death of the pulp; maybe decay reoccurred after the tooth was filled; perhaps a blow or an accident killed the pulp, or it might be that the filling is a little "high," causing the tooth to strike its opponent in the other jaw too hard. Any one of these conditions might cause the death of the pulp. Anyhow, whatever the reason, you may be sure that it's now quite defunct. Of course you're wondering, how can anything that's so dead still continue to raise such a row? Well, when that pulp passed away its mortal

remains stayed inside the tooth. As is the way with all unembalmed human material it soon became quite offensive. It generated large quantities of pus and gas. These by-products, being enclosed in a solid bonelike cavity whose main exit was blocked with a filling, had to find an escape somewhere. So far, they haven't found it, although there is one in existence: a tiny opening at the apex of the root. It's the pressure caused by the gas and the pus trying to escape that causes your tooth to ache. If you had applied heat to that tooth it would simply have increased the internal pressure. But by reducing the temperature you slowed down the activity of the pus and the gas, and you got some temporary relief. You are lucky that some of the pus hasn't escaped beyond the end of the root, because in that case it would infiltrate the tissues, and you would now have a swollen face or jaw. Of course when you get to the dentist the first thing he'll do will be to get that filling out and open the cavity completely in order to establish free drainage. Then a day or two after that you'll go back again and have the tooth extracted.

By the way, if you want to avoid another session like this one you'd better ask your dentist to have a look at that lower molar that your tongue is continually straying into. It looks like a first-rate opening for a strong and ambitious toothache.

You've noticed it, have you? Well, why don't you do something about it? Oh, you've thought about it? Only when it hurts a little, of course. And that's been when you have anything extremely cold, such as ice cream, in your mouth. Now that's strange, isn't it? The application of cold to one tooth helps to relieve the pain, while the same thing on another tooth makes it hurt. That's because the pulp is still alive in the molar; but having lost a good deal of its protecting enamel and dentine through decay, it is sensitive to sharp changes of temperature. If it were dead and the pulp chamber full of pus and gas, as it is in this upper tooth, you could relieve it by the same method you're using now. You're going to have a different problem in this other case: the problem of keeping the pulp alive. But when the cavity encroaches too closely, if it hasn't already, you'll have a dead pulp and possibly, as a result, an abscess.

When the dentist begins work on this tooth he'll carefully and gently remove as much of the soft decayed dentine as he can without exposing the pulp. Then he'll seal in a dressing of oil of cloves and leave it for several days. Later, if your tooth remains quiet and comfortable, he'll reopen the cavity and try to remove all the decay and otherwise properly prepare the cavity for filling. Sometimes even if the pulp is actually exposed it may be saved by "capping," that is, by placing a nonirritating, nonconducting material directly over the exposure, without pressure, and allowing it to remain there. However, in either event, it's doubtful whether he'll fill the tooth permanently for at least six months. Probably he'll stop it with cement and give it a trial for that time. If it does not give any trouble during the interval it may be considered reasonably safe for filling.

Take the nerve out? Yes, it is done sometimes; in fact, years ago it used to be done regularly. It was thought that if a cavity was even moderately close to the pulp it was safest to take the pulp out. But then focal infection came along, and a great deal of it was traced to these devitalized teeth. It's a difficult job to remove a pulp and then fill the root canals without introducing some infection. So now every effort is made to save pulps instead of removing them.

I'm glad I was here to stop you from using that toothache medicine I see on your bathroom shelf. It may help a little in certain cases, if you know how to use it properly. But remember this: It must be applied at the point where the pain originates. Every dentist has had patients come to him with lips and mouths blistered and raw as a result of applying some remedy they got at the drug store. To treat a toothache properly, you must have free access to the cavity. How can you expect to get the stuff into your tooth if there's a filling in the way? Furthermore, as most of these remedies contain chloroform they must be kept away from the soft tissues of the mouth. The average sufferer takes a wad of cotton, soaks it in the solution and, evidently following the theory that if a little is good, a lot must be better, applies it generously and freely over the tooth, the gums and the inside of the cheek, not omitting to get a few drops on the lips as he withdraws the applicator. These medicines are absolutely useless in trying to stop an ache in a tooth to which there is no means of access. They may be of help in cases in which the tooth has an open cavity, if you will first clean out all the accumulated débris and then place in the cavity a small pledget of cotton moistened with just a drop or two of the remedy. But keep it away from the lips, the cheeks and the gums.

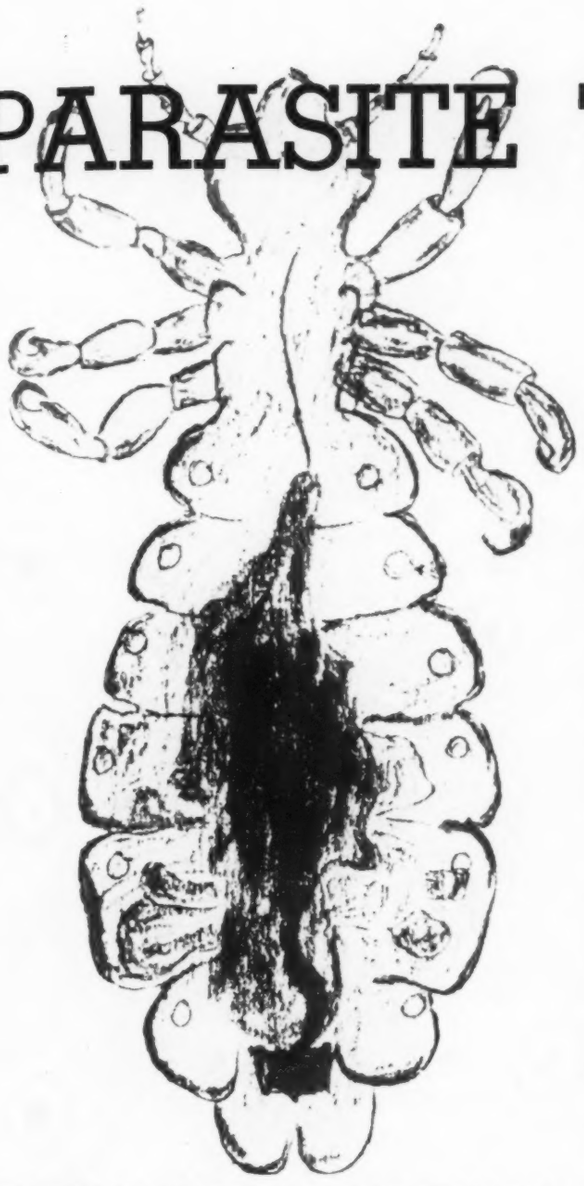
Of course you can sometimes stall off a threatening tooth by the use of sedative tablets. It's true they are of some assistance in quieting the pain; but you are merely treating symptoms, and the relief will be only temporary. You may be quite certain that sooner or later that tooth is going to demand and receive the attention to which it is entitled.

About 200 years ago Benjamin Franklin declared, "Experience keeps a dear school, but Fools will learn in no other." But 2,000 years ago the Roman Plautus remarked, "A word to the wise is sufficient."

PARASITE TRICKS: VII

The loathsome louse, thriving on human misery, brings discomfort, danger and disease declares

GEORGE A. SKINNER



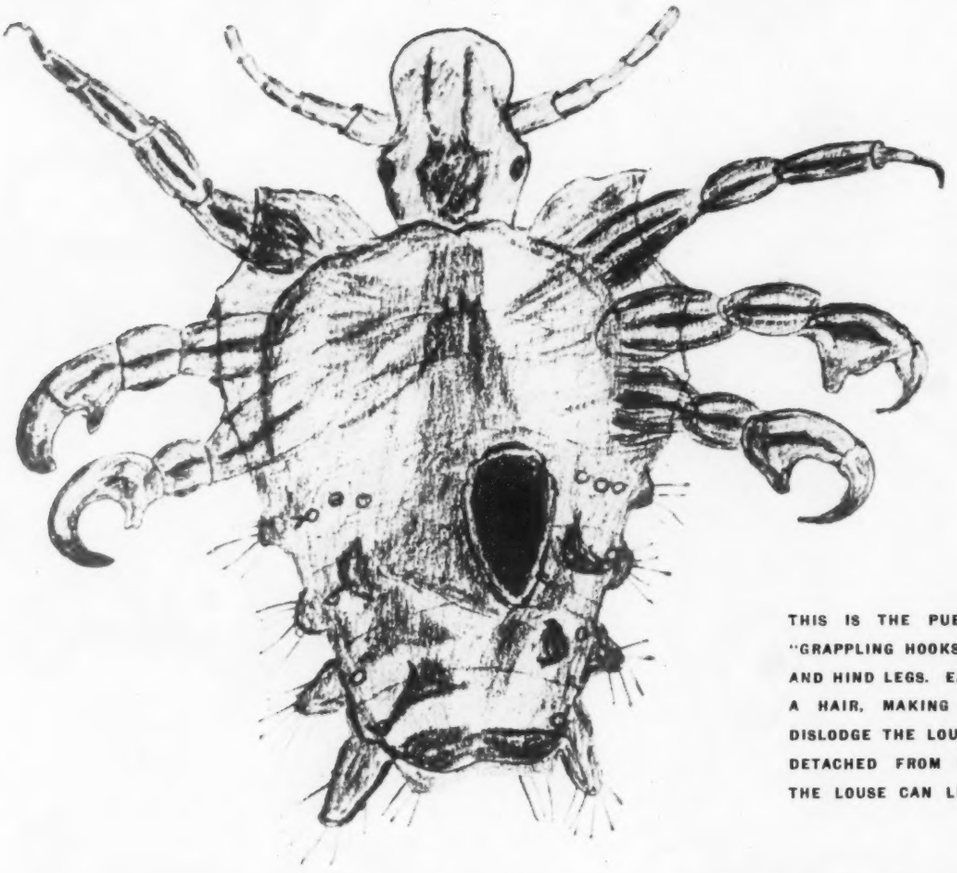
THE LOUSE THAT MAY THRIVE ON THE HUMAN BODY OR HEAD.

THE WORD "lice" is liable to cause a shiver of disgust to pass over many of us, as lice have always been connected with ideas of filth, degradation, human suffering and disease. Even if they do not go so far in our imaginations, they certainly are connected with discomfort; and any one who was afflicted with "cooties" during the World War knows how much misery such louse infestations can produce. Slang has even emphasized this general disgust of these insects, for if anything is especially displeasing it is likely to be characterized as "lousy."

Such general antipathy must be based on the experience of the race, for lice are among the old parasites of mankind, though probably dating not so far back as fleas. They are much more personal than fleas, for once attached to a person, they rarely leave unless destroyed by artificial means. Yet it is only a few years since lice were taken for granted as a necessary evil in most communities, and it was really not until the bathtub arrived as a general utility that lice commenced to diminish in the more favored class of society. This improvement has gone on gradually with better sanitary conditions, until now in our country it is mostly the neglected, the "down and outer," the tramp and the dregs of society that will be found to harbor lice regularly. Still, lice persist, and at the first hint of disaster, famine or war they seem to get the news immediately and are prepared to mobilize at once, taking advantage of our calamities to add their active efforts to our troubles. They thrive best on the conditions that make for human misery and largely disappear in times of prosperity and plenty.

Lice are ectoparasites; that is, they are parasitic on the outside of the host. Two great divisions exist: the biting lice, which are mostly on birds and some mammals, and the sucking lice, which appear only on mammals. The sucking lice principally concern man, as they are the ones capable of spreading more diseases among men than any other insect known at this time. About 200 varieties of this species are known (Anoplura or Siphunculata); but fortunately for us only about two of these attack man, and perhaps a dozen are found on domestic animals of various kinds.

While formerly entomologists noted three classifications of the lice that tormented the human body, now only two are given, it having been decided that those that occupied the head (Pediculus capitis) and those found on the body and clothing (Pediculus corporis or vestimenti) are the same. There are slight differences, even as with people who live in different sections of the country; if they change locations, especially when young, they take on the characteristics of those living about them. It has been found by experiment that the head louse, which is ordinarily somewhat smaller than the body louse and darker in color, will readily live on the body and soon changes its color, as a



THIS IS THE PUBIC OR CRAB LOUSE. IT HAS "GRAPPLING HOOKS" ON THE ENDS OF THE MIDDLE AND HIND LEGS. EACH HOOK IS ABLE TO SURROUND A HAIR, MAKING IT EXTREMELY DIFFICULT TO DISLODGE THE LOUSE BY ORDINARY MEANS. ONCE DETACHED FROM ITS SOURCE OF FOOD SUPPLY THE LOUSE CAN LIVE BUT TWO OR THREE DAYS.

person might who has been tanned all summer and lives indoors during the winter. These head lice will live and breed readily on the body, mating with body lice, and after about four generations they take on all the qualities of body lice. And it works just as well the other way, for the body louse soon becomes at home among his neighbors living on the head. Hence they are now all called human lice (Pediculus humanus), and the differences are regarded solely as due to the temporary environment under which they find themselves.

Another louse which infests the human family is commonly called the pubic louse or crab louse (Phthirius pubis).

Lice do not trick us so much during their developmental stages as some of the other insects do. When fleas and flies are very young, they are wormlike in form. Some flies even live in the water at this stage and are therefore difficult to trace unless special efforts are made to do so. Lice are more simple in their development and have but three instead of four stages, known as incomplete metamorphosis. The eggs are attached firmly to the hairs of the host or to his clothing and do not drop off as do flea eggs. It is a curious fact that the glue used for this process of cementing the eggs to hairs is one of the strongest adhesives known. All the life cycle of lice is spent on its host; while many other parasites are on the host usually only at feeding time.

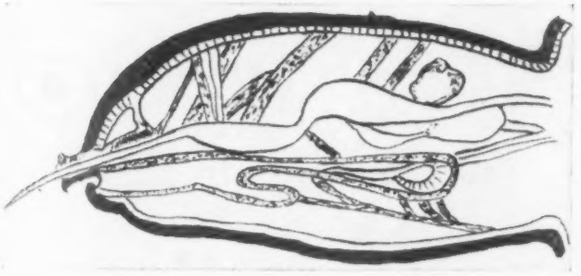
At the top of each egg is a little trap door through which the young louse may emerge quite easily when developed. The youngster when hatched looks almost exactly like its parents and behaves in about the same way, for it soon starts sucking blood. As the eggs are at a fairly uniform temperature they usually hatch in a uniform length of time, in about a week. Each female louse lays about 300 eggs in daily installments of from 8 to 12. The young lice (nymphs) grow rapidly, soon coming to maturity. Under average conditions the total life of the louse is approximately seven weeks.

Lice cannot live long if detached from the source of their food supply. Usually they survive only two or three days, and the young will die in a few hours if they cannot feed promptly after hatching. In this they differ remarkably from some other insects, which may live for many days without food. They feed frequently and voraciously. Hence where they exist in numbers on a body, they may cause so much irritation that sleep is practically impossible, and the appetite is interfered with. Such infested persons are almost always in poor physical condition. As lice destroy much more blood than they actually use for food, and as each louse feeds many times a day, the blood destruction may be quite an item in the picture.

The head of the louse is a remarkable structure from a mechanical standpoint. The eyes are small and not of much use. In some lice

the eyes have ceased to exist. It is the feeding apparatus that is the important structure. At the front of the head there are a number of hooks around the mouth which may be pushed out at feeding time and anchor the head to the victim. Then two sharp pointed spears puncture the skin, working alternately and rapidly. Following this the hypodermics that many insects use are inserted into the wound, one to inject saliva, which keeps the blood from coagulating so that it passes readily, and the other to suck in the blood. With this injection of saliva any germs that are in the digestive tract of the louse may be introduced into the blood of its victim. During feeding there are usually liberal evacuations of the intestinal contents, and the parasite is so greedy that it takes in much more blood than it can contain; so part of this is also evacuated. But in the passage there have accumulated an untold number of germs. When the meal is complete, the hooks are pulled back into the head.

The story of the louse is essentially the same whether it inhabits the hair of the head or lives on the body. The body louse prefers to live most of the time on the clothing, perhaps because the temperature of the body may be too high for its comfort. It lays its eggs usually in the clothing and attaches them to the fibers,



Modified from Sikora

A SIMPLIFIED ENLARGEMENT OF THE HEAD OF A LOUSE IS SHOWN IN CROSS SECTION. THE HOOKS WHICH ARE AROUND THE OUTSIDE OF THE MOUTH MAY BE PUSHED OUT AND ANCHORED IN THE SKIN OF THE VICTIM. THEN THE TWO "SYRINGE" NEEDLES, ONLY ONE OF WHICH IS SHOWN, MOVE ALTERNATELY BACK AND FORTH TO PIERCE THE SKIN. THE BULBOUS ENLARGEMENT PUMPS SALIVA OUT OF ONE AND DRAWS BLOOD UP THROUGH THE OTHER.

especially to wool. They are also found on the body hairs but not as commonly as on the underclothing. They prefer the clothing that is in close contact with the body, perhaps so they can feed easily without releasing their hold on these fibers, for they are equipped with six legs, and each of the legs has a regular grappling hook on the end. So we find them thickest where the clothing presses closest to the body, at the belt or neck. While all lice are usually sluggish in movement and will not ordinarily leave the body, they can develop considerable speed if away from the body and sometimes will leave voluntarily for a little while in warm weather to seek new hosts, especially if their living conditions are crowded. But they are usually eager to return to the body in a short time, particularly toward night.

The pubic louse is somewhat broader and shorter than the one just described and much more confined in its ramblings, since it rarely leaves the region of the pubic or anal hairs. Its front claws are not so well developed as those on the other four legs, which are equipped with the grappling hooks mentioned. While these insects are loathsome and disgusting and cause much irritation and skin damage, they have not so far been incriminated in the spread of any diseases.

Through the ages there has existed a terrible scourge called camp fever, ship fever, prison fever or famine fever, but all these are merely local names for typhus fever. The many local names indicate that it is a disease of crowds and occurs often during disaster such as war or famine. Such conditions are ideal for its spread; but it was not until the beginning of this century that the disease was directly connected with the body louse. For years it had been suspected that lice, bedbugs or fleas might have something to do with the problem, but the proof was only recently produced. There had been great epidemics in the past, particularly in Europe, but there had not really been much heard from it since about 1870 until the outbreak of the World War. It is estimated that fully 10 million cases of typhus, and some observers place it at much higher figures, occurred in Russia, and 2 million persons died during this great upheaval. The war had not been in operation long before the report came that 9,000 Serbians were dying daily from typhus. While it is sometimes thought that doctors and nurses bear charmed lives in handling contagious diseases, certainly it is not so with typhus, for of 460 Serbian doctors, 360 were attacked, and 120 died. In Poland after the war, where typhus fever had been ravaging the population for some four years, an official report stated that "nearly every house has from one to five cases of typhus fever, all lying on the usual beds of straw or hay."

A consideration of the foregoing facts will show that typhus is one of the most serious diseases that afflict mankind. That lice are almost solely responsible for its spread there is now no doubt; hence the presence of lice is always a danger. Any sort are bad enough, but the body louse is the particular enemy. Head lice may transmit the disease, but the positive proof is lacking in this variety that has accumulated in the other.

Another trick played by the louse was developed during the World War. Up in the trenches at the front, life was hard even under the best conditions possible. But when conditions were

at their worst, there was always a large number of men sick from various exposures or infections. This was to be expected, as it had been seen before. But this time a new trick was sprung. Men commenced to get sick with a fever that was accompanied by headache, dizziness and pain in the back and legs, and in the shins this pain was almost unendurable. All this might occur in almost any infectious disease; but when these men were sent to the hospital, though they rarely died they would not get well for a long time, usually suffering many relapses. The disease was sometimes called five day fever, as most of the attacks lasted about that long. But the total sickness was more likely to be eight or nine weeks, so it was disastrous, particularly under conditions of war.

It is however under such conditions that "lousy" tricks are at their height. After a time this disease was called trench fever, and scientists commenced to search for the cause. The disease was found to be due to the presence of lice; but in this case it was attributable not to the direct bite but to the louse's habit of freely discharging the intestinal contents onto the body surface while sucking blood. In the intestinal discharges, millions of the germs causing the fever were found, and these were scratched into the skin in the attempt of men to ease the persistent and severe irritation caused by "cootie bites."

Another serious disease now known to be transmitted by lice is called relapsing fever. It is probably transmitted largely through the same method as trench fever, as the little worm-like organism, the spirochete, which is found in great abundance in lice whenever this disease occurs, is passed out in the intestinal contents. Scratching permits the entry of the parasite into the body. This fever may recur many times and has a low mortality rate. It may become a problem whenever conditions make lice prevalent, but fortunately it is usually quickly curable.

A disease that has been much discussed in recent years is tularemia, more commonly known as rabbit fever. Most of the cases so far have been contracted by hunters, butchers, cooks and others handling, particularly skinning, rabbits. But it may be conveyed in many other ways, and the bites of lice are among these ways. It is always so serious that every possible means to avoid it is taken, for up to the present the only means of controlling it is by prevention.

Lice may convey to man's most useful friend the horse an extremely serious disease called surra, which has a high mortality rate. Apparently this enemy of mankind is not satisfied with its destructive powers among the human family but exhibits them also among his animal friends. *(Continued on page 861)*

HEALTHGRAMS *from articles in this issue*

¶The natural world sometimes smiles and sometimes frowns on man's efforts; but its most persistent mood seems to be one of indifference. *See page 782*

¶There does not appear to be any more reason for regarding adolescence as a period of turmoil physically than for so regarding any other period of growth. *See page 832*

¶The entire future of boys and girls does not depend on the first day at school, but it often plays a conspicuous part in life's drama. *See page 838*

¶A toothache powder or sedative tablet may quiet the pain; but that is merely treating symptoms, and the relief will be only temporary. *See page 818*

¶The fuel of the body is food, and the individual who maintains an adequate balance between food intake and food combustion is not apt to become fat. *See page 812*

¶Every successful pneumothorax means a better chance for life. *See page 796*

¶The autopsy is the most distinctly professional feature in medicine and the least appreciated by the public. *See page 787*

¶The important thing for the layman to learn is that functional indigestion, in which nothing organic can be found to explain the symptoms, is common, and that the patient never comes to any bad end because of it. *See page 776*

¶Mental health and growth require as careful diagnosis and hygiene as does physical health. *See page 779*

¶The cardiac patient must acquire an unhurried free activity and with it a sense of leisure. *See page 800*

¶Lice thrive best on the conditions that make for human misery and largely disappear in times of prosperity and plenty. *See page 821*

MEDICAL INSPECTION

By Ann Chipley

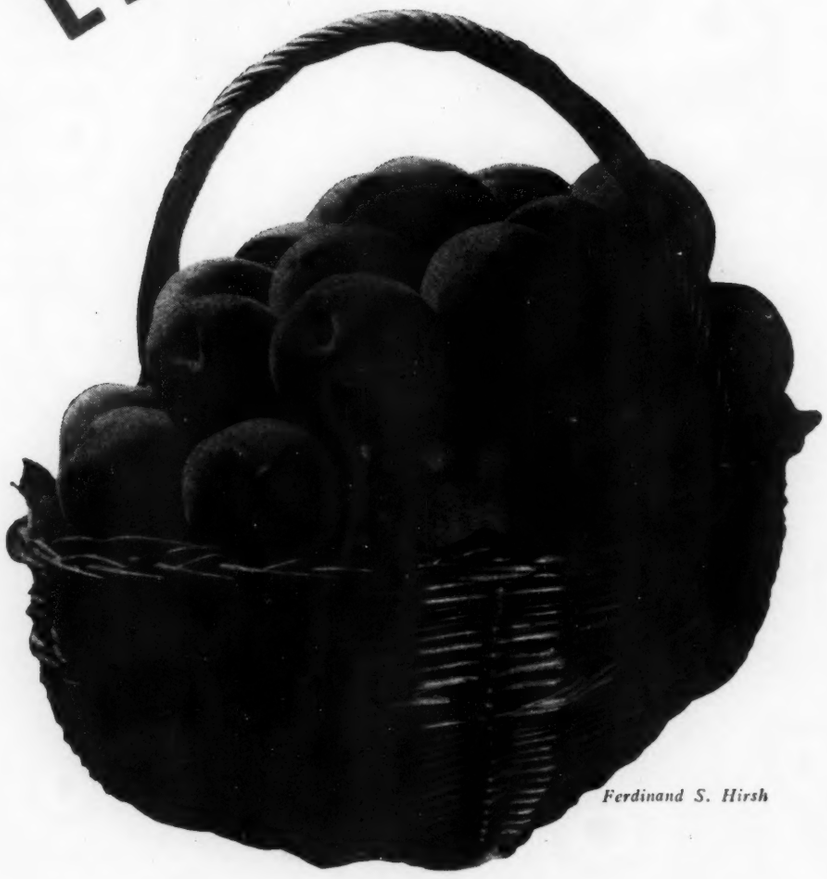
"Good morning to all!"
I bow and say.
"I'm glad to be back
To school today."

Before I hang
My hat and coat
The nurse in white
Looks down my throat.

She makes me stick
My tongue way out
And gives me a pat
And a turn about.

I say "Ah, ah!"
And she looks in my ear—
"I'm glad your cold
Is better, my dear!"

NOW ENTER PEACHES!



Ferdinand S. Hirsh

Exotic and alluring, they tempt the gourmet and appease the glutton, says

HARRIET MORGAN FYLER

AS SUMMER advances into fall, peaches are increasingly plentiful in orchards and markets. If you are fortunate, you go out into the orchard and pick your own fruit from the tree. It is warm with the sun and heavy with juice, and you may have to give the birds an argument in order to get it! But if you have to buy in a market you will find the scent and flavor still there, and now is the moment to enjoy this fruit, for nothing surpasses a ripe peach in flavor and aroma.

By whatever means the fruit reaches the table, once there it becomes an ornament and a treasure. Perfect and very large, it lies on the plate with its leaves attached and the bloom still adorning its cheeks. It is exotic and alluring, and eating it seems almost an act of vandalism, like devouring the centerpiece of the table. But bite into the peach, and you will be glad that you are living.

Peaches, like Masefield's "Cargoes," carry with them the associations of many centuries. They enter early European history in Italy, brought from Persia with other luxuries of Bagdad and the Vale of Kashmir. Their story goes back to the tenth century B. C. to the gardens of old China, to

> A park where the peach-blossoms blew,
> In the reign of the Emperor Hwang.

Peach trees belong to the tradition of old pottery and forbidden gardens.

The peach reached a high state of beauty and toothsomeness in both France and England,

where gardeners favor training peach trees flat against the wall, thus sheltering them from the wind and soaking them in sunshine. Notwithstanding the prominence of the peach in Europe, the fruit is completely at home in America. William Penn found peach groves on the Indian plantations. The colonists supposed that the tree was native here. As a matter of fact, the groves all stemmed back to the Carolina orchards, which had been transplanted from England.

The fruit was popular with all the early settlers. Even the Puritans, who looked with suspicion on foods which were not mentioned in the Bible and even discouraged the growing of potatoes on that account, accepted peaches as part of their diet.

Peach trees were carried across the Alleghanies and to the southern shores of the Great Lakes, thence westward to the Pacific coast. There are few peach trees in the great basin between the Mississippi and the Sierras. They abound, however, on the Pacific coast. With refrigerated cars running from seacoast to seacoast, fresh peaches are available in the markets through several months.

There are folk who argue where the best peaches come from. A Californian will say that the best are grown on the Pacific coast. Another man may champion the peaches of Florida. A third may remember them as finest in the sandy sun-drenched soil of southern Michigan. Some persons maintain that peaches attain their richest flavor when grown along the stone walls of New England, where the orchards run down to the sea and the wind is never quiet. Travelers tell you that they are sweetest in the little hilly orchards of Torquay, in southern England, where the Gulf Stream creates subtropical conditions, or on trees trained against the walls of gardens in southern France. The best peaches come, in truth, from the place where one has enjoyed them most.

There are two kinds of peaches: white-fleshed and yellow-fleshed, both having freestone and clingstone varieties. The preferred varieties of freestones are Elberta, Lovell, Muir and Salwey, and of clingstones, Phillipps, Peak, Libbee and Hanss.

When buying peaches in the market, do not select peaches that are too small. Experts say that the smallest marketable peach should be approximately 2 inches in diameter. Any smaller than this is usually too immature and will not ripen into full flavor.

The color of the fruit is the best indication of ripeness. The better quality peach is distinguished by its red cheek on a rich yellow or creamy background. If the peach is a blushing variety you cannot count on the blush unless the ground color is creamy or yellow, for the peach is a gay deceiver. Other important factors in a ripe peach are its soft, but not mushy, flesh and its fragrant ripe aroma. As the fruit is extremely perishable, watch carefully for bruised spots, which can be seen as sunken areas that are turning dark beneath the skin.

To remove the skin and to preserve the juice and firmness of the fruit pour boiling water in sufficient amount to cover them entirely. After a few seconds allow cold water to run into the saucepan until the peaches feel cool to the touch. The skin will then come off without any difficulty, and the peach will be smooth and firm. This chilling prevents the heat from penetrating into the flesh and starting the flow of juice.

Peaches have a major place on the list of "must" foods that nutritionists advocate for the adequate diet. All peaches are a good source of vitamin C. Only the yellow varieties have any vitamin A, of which they are rated as an excellent source even when preserved, as vitamin A is not greatly affected by heat. They are a good source of vitamins B_1 and G. Peaches are also considered a good hematopoietic, or blood-building, food as they contain important organic and mineral factors helpful in the formation of hemoglobin.

There is no better example of the difference between Continental and American cooks than the dishes in which peaches have a part. The Continental cook builds up the flavor and the prestige of the peach with juices of other fruits, with pastry, with grated almonds and peach pits and with wine sauce. It is characteristic of Continental housewifery to make use of the kernel of the peach, with its slightly bitter and penetrating flavor. Two or three of these kernels are blanched, mixed with half a cupful of blanched almonds, shredded and sprinkled on the dough before baking. The American cook accepts the flavor of the peach as it is and does little to enhance it.

Another difference is in the use of peaches with pies and cakes. The foreign chef lays stress on the pastry and is sparing of the fruit, while the American cook tries to use as much fruit as possible. Peach pastry, or peach cake, as one gets it from the hand of a foreign cook, is a marvel of brown pastry covered with a thin layer of sliced peaches. The American deep-dish peach pie is a good illustration of the prodigal hand of the American housewife when using fruit. And certainly there is no dish more welcome on the family table.

There is also a difference between American and Continental recipes; the former are very accurate, and the latter exceedingly vague. A Continental recipe seldom tells how many peaches to use to make *Pêche Melba,* or how many spoonfuls of sugar should go into the vanilla syrup. Continental recipes are full of esoteric measurements, such as a pinch of salt, a suspicion of vanilla or a generous sprinkling of wine. There are constant references to

seasoning to taste, as if the recipe were merely intended to give a general direction, relying on the experience and innate art of the cook to make the dish turn out right. American recipes, on the other hand, look like doctors' prescriptions. Perfect cooking seems to depend on perfect dosage.

Probably the best known dish in which peaches have a part is *Pêche Melba,* a famous confection first prepared in honor of Mme. Melba by M. Escoffier, chef of the Hotel Savoy in London. At a special luncheon, Mme. Melba received the offering in a little silver bowl with his compliments. Finding that she liked it, he asked permission to name it in her honor. It became popular in London at once. His recipe is as follows:

> Poach the peaches in vanilla flavored syrup. Dish them in a timbale on a layer of vanilla ice cream, and coat them with a raspberry purée.

G. Lugot, chef of the Waldorf, varies this recipe by using the strawberry in place of the raspberry. This is his recipe for Peach Melba for four persons:

> One quart French vanilla ice cream. Four peaches (peeled and poached).
>
> One-half pint Melba sauce.
>
> Select two small baskets of ripe strawberries; wash them thoroughly, and mix with 10 ounces of sugar. Strain and reserve.
>
> Dispose of the ice cream in four special dishes, putting one peach on top of each.
>
> Cover the peaches and ice cream with Melba sauce, and serve promptly, very cold.

There is an old recipe for brandied peaches which has long held a place of esteem. A basket of peaches is scalded, peeled, cooked in a syrup for about five minutes, or until tender, then packed in jars and covered with the syrup. To each jar is added 2 tablespoonfuls of brandy.

When we are learning all over again to use wine in cooking, M. Escoffier's recipe for peaches cooked in wine is timely. He calls this dish "Pêches au Chateau-Lafitte":

> Scald the peaches; peel them, and cut them in two.
>
> Poach them in sufficient Chateau-Lafitte wine to cover them, sugar wine to the extent of 10 ounces of sugar per bottle.
>
> Leave them to cook in the syrup, and dish them in a silver timbale.

Peach Ice Cream

1 pint milk	1½ teaspoonfuls vanilla
½ pint heavy cream	3 egg whites, beaten stiff
1¼ cupfuls powdered sugar	1 cupful finely mashed ripe peach pulp
¼ teaspoonful salt	

Beat the milk, cream, sugar, salt and vanilla together in a bowl. Transfer to the freezer can, pack with 3 parts of cracked ice to 1 part of salt, and begin to freeze. After turning for about 8 minutes, add the egg whites and peach pulp, and finish freezing. Pack well with ice and salt, and let stand for 3 hours before serving. This makes 2 quarts.

A typical American deep-dish peach pie is this recipe:

9 ripe peaches	1 egg, well beaten
⅔ cupful sugar	½ cupful milk
⅓ cupful water	2½ teaspoonfuls baking powder
¼ cupful butter	1½ cupfuls cake flour
½ cupful sugar	

¼ teaspoonful nutmeg

Peel, stone and cut in halves nine choice ripe peaches. Make a syrup of the water and ⅔ cupful of sugar. In this, simmer the peach halves until they are tender. Then take them off the fire, and set them aside to cool. Cream the butter, adding ½ cupful of sugar gradually. Beat the egg into the butter and sugar mixture. Add alternately the milk and the flour, with which the baking powder has been sifted. Season with grated nutmeg. Butter a shallow, medium-sized baking pan which holds about 1½ quarts. Arrange the peaches with the syrup in the pan, and pour over them the cake batter. Bake in a medium hot oven (375 F.) about 30 to 40 minutes. Be sure the center is well baked. Serve with Foamy Custard Sauce:

¼ cupful butter	½ cupful milk
1 cupful sugar	1 tablespoonful lemon juice
2 eggs	

½ teaspoonful vanilla

Cream the butter, add the sugar, the well beaten egg yolks and the milk, and cook over hot water until the mixture thickens. Add the flavoring, and fold in the whites beaten until they are very stiff. Beat thoroughly, and serve at once.

Peach Salad Dessert

6 halves of peaches	½ cupful mayonnaise
1 package of raspberry gelatin	¼ cupful whipped cream
1 box of fresh raspberries	¼ cupful chopped almonds (toasted)

Put peaches (pit side down) in muffin tins or any good-sized individual molds, and pour gelatin, which has been dissolved according to directions on package, over them. When set, unmold on a lettuce leaf, and scoop out the jelly left in the center of the peach. Fill the cavity with fresh raspberries. Serve with toasted nut mayonnaise, made by combining the last three ingredients of the recipe. The combined flavors of peach, raspberry and almond are delicious. Either fresh or canned peaches and fresh raspberries or jam may be used with equal success.

Baked Peaches with Wine

6 large fresh or canned peaches	Grated rind of one lemon
1 tablespoonful butter	½ cupful water
½ teaspoonful mace	1 cupful sugar

2 tablespoonfuls domestic white wine

Peel the peaches, if fresh ones, and put them in a covered baking dish. Add the butter, water, mace, sugar and white wine. Grate the rind of the lemon over the top. Cover, and bake in 400 F. oven until the peaches are very tender. Serve hot.

When canned peaches are used, add 1 tablespoonful Muscatel wine to replace the fresh peach pit flavor. Place a spoonful of whipped cream on top of each peach, and garnish with a maraschino cherry.

EXERCISE

FROM THE MOMENT THAT HE SWORE THAT HE WOULD "LICK THE GAME," KING JAMES WAS A LOST SOUL.

***To golf, game of bogeys and birdies, pastime of old and young, and sport of king and commoner, is devoted the sixth article in this series by* DUDLEY B. REED**

"'THE TIME has come,' the Walrus said, 'to talk of many things.'" These things must include golf, the game on which more ink and profanity have been spilled than any other ten; that all-pervading, universal game which makes widows of some and maniacs of others; the prop of the distillers and brewers; the occasion of more early afternoon hope and late afternoon depression than anything else which is; the gift of God to the Scotchman and of the Scotchman to the world; the most prevalent outdoor physical sport in this country.

The subject would have been avoided if it could have been; but how can you write about sports for middle-aged men and omit mention of the one sport which is for them, par excellence? You can't, but a moderately bright angel would hesitate to put pen to paper for the purpose of discussing the subject. It has been discussed by legions of experts, professionals, humorists, health workers, faddists, preachers, doctors and plain writers. But what can you do when you know that it is played by greater legions of clerks, housewives, captains of industry, street car motormen, orphans, merchant princes, newsboys, movie stars, left-handed men, school teachers, janitors, mechanics, gangsters, one-armed men, stenographers —the list would include persons of all occupations, colors, dispositions, ancestries, predilections and religious faiths.

The thing is ubiquitous, it is protean, it is inevitable. Wherever you go golf is. You may drive into the remote fastnesses of a mountain region only to be greeted by a great sign, "Two Miles to the Watchee-Watchee Golf Club—Three Eighteen-Hole Courses—Guests Welcome." You may wander in a great metropolis and find it headlined in the department stores and played in the parks. It is as inescapable as death and taxes. It is played by millions and, although it was formerly scoffed at as an old man's game, it is played increasingly by the young. It is taught in schools, camps and colleges. It supports thousands of families who make balls and clubs and slacks, and umbrellas which change into stools, and rubbers with spikes, and wooden tees and rubber tees and paper tees; who caddy and sell drinks and manicure greens and mow fairways and write golf stories, truth or fiction, and who try to teach golf to awkward and perspiring pupils indoors and out.

Undoubtedly it is much in our midst. It may be praised or reviled. It may be followed as a career, as a sport or not at all; but it can't be ignored. Therefore let us proceed not to ignore it.

Having fallen into the habit of delving into the background and development of the sports which we consider let's not make any distinction in favor of, or against, golf. And let's begin by saying that there is no evidence that it was played in the Eocene or Neolithic ages. Furthermore, contrary to the case in some of the other sports, such as swimming and riding, we don't have to trust much to an undependable imagination since there are reasonably authentic records. The name "golf" is said to have as its older forms *goff*, *gouff* or *gowff* but not *goof* as nearly as we can discover. The name is thought to derive from the German *kolbe*, a club, or the Dutch *kolf*, which may indicate a Dutch origin for the game. There is further evidence that God may have used the Dutch as intermediaries in giving it to the Scots. There is an ancient Dutch picture representing three citizens with clubs who seem to be putting

at a hole in the turf; whereas many of the old Dutch pictures thought to be related to golf indicate that the putting at least was done on the ice. There is no evident harm, and no serious injustice to Scotland, in letting the Dutch have credit for originating golf as well as tulips and for keeping out of wars pretty well for some time, although wooden shoes are not widely used for golf today. The time of the game's beginnings is probably somewhere in the fourteenth century.

At any rate it had become sufficiently popular in Scotland in 1457 to interfere seriously with the practice of archery. In March of that year the Scottish parliament "decreted and ordained that the futeball and golf be utterly cryit down, and nocht usit." How those members of parliament would have chortled if they could have known that archery golf would be played quite widely in the year of Our Lord 1938 in a colony across the sea of which King George lost control some years back, thus illustrating the cycles of history. This legislation didn't work much better than our own on prohibition. There were golf bootleggers, and in 1471 it was deemed advisable to repeat the enactment with more vehemence and with teeth in the form of penalties, thus—"Fute-ball and golf forbidden. Item, it is statut and ordainit that in na place of the realme there be usit fute-ball, golfe, or uther sik unprofitabill sportis." Those oldsters little knew how "unprofitabill" this game would prove to many a modern.

Even so early in the history of the game there developed the conflict which still persists between those who feel that in a Christian country one should turn aside from carnal pursuits on the Sabbath and those who inclined to the opinion that they were better Christians if they had a little outdoor exercise on that day, say about eighteen holes' worth. And the town council of Edinburgh in 1592 "ordainis proclamation to be made threw this burgh, that na inhabitants of the samyn be seen at ony pastymes within or without the toun, upon the Sabbath day, sic as golfe &c." That phrase "without the toun" is craftily introduced and quite evidently aimed at those who would slip quietly out to the country club telling their wives to hand to any persons who telephoned that hoary old fiction which is still in use, "He has been called out of town." Even the quaint spellings of these enactments fail to obscure

the fact that those in power were, in some sense, hostile to this insistently growing game which was played with such enthusiasm that the forces of conservatism and organized religion compromised again and modified the edict so that the prohibition was merely "in tyme of sermons." And that is about where ministers and churches stand today.

King James IV of Scotland signed one or more laws against the game but was persuaded, in a weak moment, to give it a personal trial on the same principle which is urged on our college students at times, that a person cannot combat evil effectively unless he has tried it. Alas, poor old Jim had the same experience which thousands of other Jims and Harrys have had since. He tried it, was exasperated at his inability to hit that measly little ball successfully and swore that he would lick the—— game.

Of course, as you know and I know, from that moment he was a lost soul. He might just as well have started smoking opium. And so he became the first king to figure definitely and formally in the golfing records, although, even before him, the pastime had been known as "the royal and ancient game of goff." Apparently the thing was so contagious that women were contaminated way back when. By her enemies it is asserted that Mary Stuart showed her callousness but a few days after the murder of her husband by being "seen playing golf and pallmall in the fields beside Seton." For good and sufficient reasons we shall not spend time on pallmall; but it would seem that Mary was the sporting ancestor of those hordes of women who, in the male vernacular, clutter up our courses today slowing down the lords of creation behind them. Perhaps it is treason to our sex to remark that the same foursome of lords of creation would linger on the green to get down on their individual and collective marrow bones, sighting for putts and feeling over the turf to discover which way the grass lies, would then putt with the greatest deliberation and stand on the green for a minute or two figuring out their bets, utterly oblivious of the faster playing foursome which has been on their heels for six holes. But life is like that. "Oh, wad some power the giftie gie us, to see oursels as ithers see us," a sapient remark made by a Scotchman. It's all in the point of view, my dog or my neighbor's, and it has been my observation that the hardest losers and poorest sports among men are those who didn't play games in their youth. We can't get our youth back; but our sons have theirs to live, and there may be a moral in that.

It is also in the records that the democracy of this great game has been a part of it for centuries as has an adjunct, possibly less noble, the whetting of the keen edge of zestful competition by a little wager on the side. James II of England, when he was Duke of York, was sent to Edinburgh as commissioner of the king to parliament and, while there, fell into a small bickering with two noblemen of his suite anent the matter of golf. The conversation can almost be heard across the centuries, translated into English by the writer:

FIRST NOBLEMAN: The trouble with you, Dukie, is that you think that royal blood necessarily qualifies a man to play in the low nineties.

DUKE *(quite nettled by "Dukie"):* Is zat so?

FIRST NOBLEMAN: Yes, zat's so.

SECOND NOBLEMAN: And furthermore your head comes up on every shot as though it was hitched to an elastic.

DUKE: Is zat so?

FIRST NOBLEMAN: I'd like to bet that I can beat you and use nothing but a mashie.

DUKE *(now becoming interested):* How much?

FIRST NOBLEMAN: Oh, ten pounds.

DUKE: Chickenfeed.

SECOND NOBLEMAN: I'll wager you twenty pounds that I can beat you with one hand.

DUKE: And me handicapped by royal blood and an elastic head?

FIRST NOBLEMAN: Why, you big bum, I'll bet you any amount you want that I can beat you on any day between Sunday and Saturday inclusive.

SECOND NOBLEMAN: Me too.

DUKE: Well, listen, you poor fish, I'll bet you five hundred pounds even that I'll go out and pick up the first Scotchman I see and beat you two on any course you name.

SECOND NOBLEMAN: Five hundred?

FIRST NOBLEMAN: Hmm, that's a lot of money.

DUKE: Yes, and you've talked a lot of golf. How much can you play?

FIRST NOBLEMAN: You're on.

SECOND NOBLEMAN: O.K., Duke.

Now you understand that this detailed colloquy does not appear in the authentic records; but, unless men have changed more than we are led to suppose by things which are authentic, this must have been essentially what passed. At any rate, a large bet was made, and the duke went out and signed up one Johne Patersone, a shoemaker, and he and the duke won with ease, it being our guess that Johne had the best score of the four, and therewith was registered a great triumph for democracy.

Parenthetically, this democracy in sport is a somewhat curious thing. If you will accompany me back to my college days (and this is probably the last time I shall ask such a thing of you) you will discover that Oberlin had Negro students, in fact it was the first college to admit them, a thing of which it need not be ashamed, and occasionally a good Negro athlete showed up and played on the teams. The Cleveland papers, supporters of Western Reserve University and Case School of Applied Science (both good institutions), made more or less capital of this fact. Sun- *(Continued on page 844)*

Bodily Changes in Adolescence: I

By HOWARD V. MEREDITH

ADOLESCENCE is commonly thought to be a period of general upheaval. In the opinion of many, this upheaval is unequaled by any of the changes in growth that occur during the earlier development of the child. Not only is there supposed to be serious "strain and stress" mentally, but much is made of the "turmoil" physically.

One hears that adolescence is characterized by marked bodily changes and that these changes have far reaching significance. Frequent mention is made of the sudden spurt in body growth, which is considered to cause the adolescent to become noticeably awkward or clumsy; of the great amount of energy used by the adolescent for growth, which is assumed to be responsible for manifestations of laziness and fatigue, and of attainment of sexual maturity with its supposedly disconcerting aspects and accompanying difficulties.

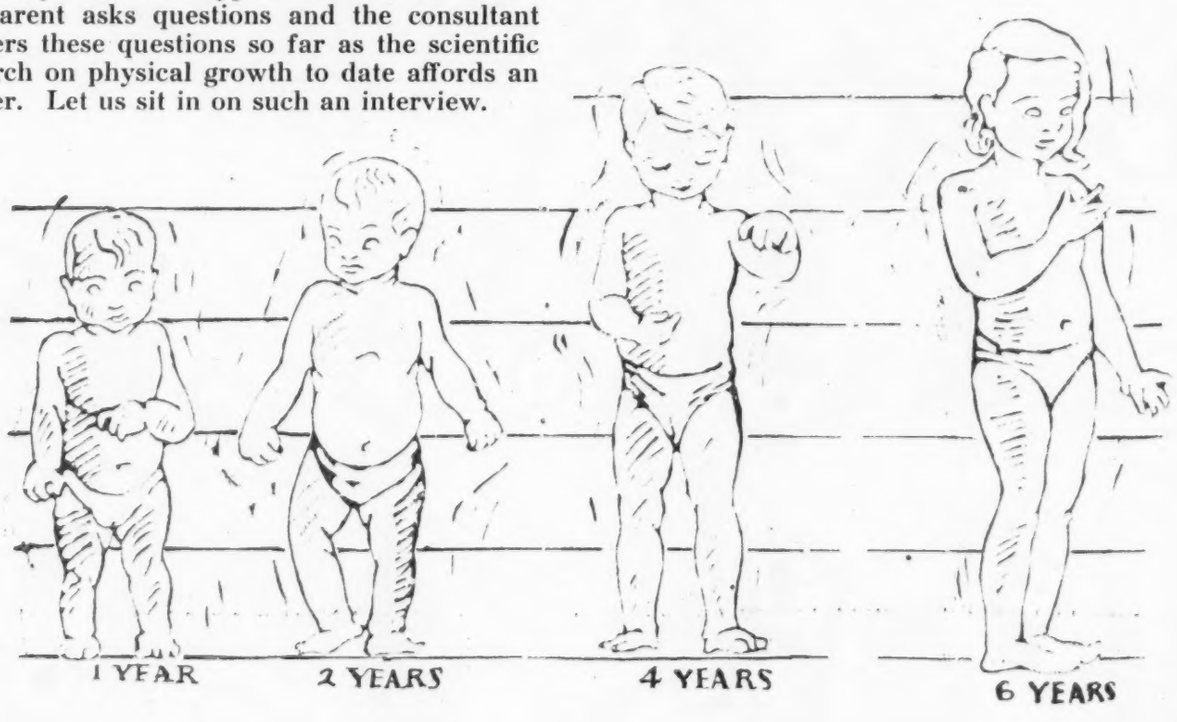
Are these current ideas sound? Is adolescence correctly regarded as a period of physical turmoil? What actually takes place in various aspects of bodily growth during adolescence, and what is the significance of these bodily changes?

From time to time I have had the opportunity of discussing questions of this type both with parents of adolescent boys and girls and with others engaged in teaching adolescents or in counseling them. These discussions have usually taken the form of an interview. Following some preliminary conversation, the interview ordinarily becomes a type of situation in which the parent asks questions and the consultant answers these questions so far as the scientific research on physical growth to date affords an answer. Let us sit in on such an interview.

PARENT: Is it correct to regard adolescence as a period of physical turmoil?

CONSULTANT: If by "turmoil" one means great confusion, I would say that adolescence is *not* a period of physical turmoil. In no sense is there marked disturbance or disarticulation such as one might imagine if the boy or girl had to undergo some abrupt change from the childhood way of growing to a new way of growing. On the other hand, if "turmoil" is used as meaning *any* degree of change, I should say that adolescence could be regarded as a period of turmoil. In this sense, however, childhood, infancy and prenatal life might also be regarded as periods of physical turmoil.

Let me illustrate. While it is true that the adolescent makes some rapid gains in height and weight, it is also true that the young infant makes even greater gains in these respects. While it is true that at adolescence there is a rapid growth of hair in the armpits and around the genital organs, it is also true that infancy is characterized by the rapid eruption of twenty temporary teeth and that childhood is marked by a panorama of tooth loss and replacement. While it is true that the adolescent girl undergoes rapid development of the breasts and the adolescent boy shows considerable development of the external genital organs, it is equally true that boys and girls undergo extremely rapid growth of the head in the period of the embryo and marked growth of the arms and legs in the fetal period. In short, there does not appear to be any more reason for regarding adolescence as a period of turmoil physically than for



so regarding any other period of growth. Physical growth is such that each period blends cumulatively into the succeeding period, and *every* period may justly lay claim to distinctive structural changes.

PARENT: I gather that certain parts of the body may grow rapidly at an early age and more slowly at a later age; while other parts may have their periods of slow and rapid growth at distinctly different ages. In what respects does the body grow slowly at adolescence and in what respects rapidly?

CONSULTANT: This question can probably be answered most clearly if we divide adolescent growth into three or four types or levels.

First, there is the level at which no growth whatever is known to occur. This level is illustrated by the nervous system. The brain and the spinal cord grow rapidly during the period of the embryo and fairly rapidly during fetal life and early infancy. By about 2 years of age, these structures have almost reached their adult size. Consequently, in contrast to playing a role in a physical turmoil at adolescence, it is probable that the brain and spinal cord are structurally dormant at this time, having attained their mature size and weight some years previously.

Second, there is the level at which growth is going forward very slowly. This level is illustrated by the face. Most dimensions of the face show rather constant and continued growth during childhood and adolescence. The growth is small, however, and dimensions such as the width of the face register gains of less than one-half inch for the entire adolescent period.

9 YEARS 12 YEARS 15 YEARS

Third, there is the level at which growth has been going forward fairly rapidly during childhood and becomes somewhat speeded up at adolescence. This level is illustrated by height and weight and by numerous dimensions of the trunk, the arms and the legs. Growth in these dimensions tapers off from being extremely rapid during prenatal life to being moderately rapid during childhood. There then occurs the slight, though definite, acceleration which has become popularly known as the "adolescent spurt."

Finally, there is the level at which growth has been fairly dormant during childhood and becomes rapid at adolescence. This level is illustrated by the so-called primary and secondary sex characteristics. These characteristics include the growth of heavy axillary and pubic hair, the development of the primary sexual organs and consequent attainment of sexual maturity, the development of the breasts in the girl and the growth of hair on the face in the boy. It is at this level that the changes at adolescence are most distinctive and most marked.

PARENT: Is it true that girls reach adolescence earlier than boys?

CONSULTANT: The average girl both begins and ends her adolescent growth about two years earlier than the average boy. For example, girls begin their adolescent spurt in height, on the average, at 10½ years of age, while the adolescent spurt in height for the average boy does not begin until 13 years of age. It does not follow, however, that all girls reach adolescence sooner than any boy. About fifteen girls in every hundred begin the spurt in height as late as 12 or 13 years of age; while the height spurt for about fifteen boys in every hundred is begun as early as 10 or 11 years of age. Thus, it is possible for a certain early-maturing Tom to reach adolescence a year or more before a certain late-maturing Mary or Jane.

PARENT: At what age are the average boy and girl at the crest, or peak, of the adolescent spurt?

CONSULTANT: For such measurements as height, weight, girth of the chest and girth of the shoulders, the adolescent acceleration is at its maximum at approximately 14½ years for the average boy and at approximately 12 years for the average girl.

PARENT: How much do boys and girls increase in size at these average ages of 12 and 14½ years? That is to say, at the average age when the adolescent spurt is most rapid, how much do boys and girls grow in such body

dimensions as height, weight, girth of chest and width of shoulders?

CONSULTANT: During the one-year age interval from 11½ to 12½ the average girl increases approximately 10½ pounds in weight, 2½ inches in height, 1¼ inches in girth of chest (measured just below the breasts) and slightly more than ½ inch in breadth of shoulders and also in width of hips. The average boy, during the period from 14 to 15 years of age, becomes larger in size by roughly 13 pounds in weight, 2½ inches in height, 1½ inches in girth of chest (measured at the same level as for girls), more than ½ inch in breadth of shoulders and slightly less than ½ inch in width of hips. The series of gains for each sex are similar, though you will notice that girls show a slightly greater increase in width of hips, while boys show slightly greater increases in weight and girth of chest.

PARENT: You mention height as one of the measurements which increases rapidly at adolescence. How does the amount that the child grows in height during an adolescent spurt year compare with the amount he grows during a typical year of childhood?

CONSULTANT: Let us get an even broader perspective by comparing the gains for infancy and adolescence as well as for childhood and adolescence. The average boy grows approximately 10 inches between birth and 1 year of age, 5 inches between 1 and 2 years of age, 2 inches between 9 and 10 years of age, and 2½ inches between 14 and 15 years of age. From these figures we see that the average amount of growth in height is only slightly greater at the so-called "spurt" years than in late childhood.

PARENT: I was aware that growth in height, weight and many other dimensions of the body was much more rapid during infancy than at any later date. I am surprised, however, that your figure is as low as 2½ inches for the age when the adolescent spurt is most rapid. I am sure I have known adolescent boys and girls that grew more than this amount in a year.

CONSULTANT: Let me remind you that my figures were for average growth and that I have not yet discussed the growth of individuals. The individual boy or girl varies much more at adolescence than in childhood with respect to the amount of height gained during a year. For example, during the childhood years from 7 to 10, the individual boy will rarely grow less than 1½ inches or more than 2½ inches in any one year. In contrast with this regularity of increase, during the adolescent years from 13 to 16 the individual boy not infrequently grows as much as 4 inches or as little as 1 inch in a single year. One individual may reach his spurt early and taper off from a growth of 4 or 4½ inches between 13 and 14 years of age to less than 1 inch between 15 and 16 years of age. Another individual may reach his spurt late and increase from a growth of less than 2 inches between 13 and 14 years of age to 4 inches or more between 15 and 16 years of age.

PARENT: Let me see if I follow you. Between 7 and 10 the individual boy can be counted on to grow roughly 2 inches every year, while between 13 and 16 he may grow over 4 inches the first year, 2 inches the next and less than an inch the last; or, he may grow 2 inches the first year, 1½ inches the next and about 4 inches the last.

CONSULTANT: Exactly. In other words, there are times during adolescence when the individual is growing much faster than he was during his childhood years, and there are times when he is growing decidedly more slowly.

PARENT: I should like to pursue this question of rates of growth during adolescence a little further. I have a 14 year old son whose present height is 5 feet, 4 inches. Can you tell me on the basis of this information whether he is likely to grow less than 1 inch or more than 4 inches within the next year?

CONSULTANT: With only this one item of information, I cannot. He may have reached his adolescent spurt early and have grown 6 or 7 inches in the previous two years; in this case, he probably will not grow more than 1 inch during the next year since he has almost attained adult stature. Alternatively, however, he may have recently begun his spurt, or he may not reach it for another year or more. If he has recently reached it, he may grow as much as 4 inches next year; while if he has not yet reached it, his growth for the next year will probably approximate 2 inches.

PARENT: I noted your remark with reference to having one item of information. Could you make better estimate of the amount the boy ought to grow during the coming year if you had other information?

CONSULTANT: Yes, it would be possible to improve my estimate of his expected growth considerably if you could supply a record showing measurements of his height at half-yearly intervals for the preceding three or four years, or if ratings were available on his present skeletal development and stage of pubescence.

PARENT: Some time ago, I recall seeing a newspaper article under the caption "Once Tall, Always Tall." Is it true that the child who is tall before adolescence will be tall during adolescence?

CONSULTANT: Your question cannot be satisfactorily answered by either "yes" or "no." It is a question requiring discussion. Consequently, I will first present some concrete material on height and then ask you to raise specific questions concerning this material.

[NOTE.—This discussion will be concluded in the next issue.]

RADIO, NEWEST OF EDUCATIONAL TOOLS, NOW DRAMATIZES HEALTH TEACHING FOR THE CLASSROOMS OF THE NATION.

TO AMERICA'S SCHOOLS *Your Health!*

REJOICING in a first award received from the Ninth Annual Session of the Institute for Education by Radio, held at Ohio State University, Columbus, in May 1938, the American Medical Association and the National Broadcasting Company present the 1938-39 series of radio programs under the title "Your Health." These programs, as in the last previous season, are addressed especially to senior and junior high schools but can be found useful and helpful by older listeners. They have also been used in some schools as low as the fifth grade, although they are not designed for this purpose.

In HYGEIA beginning October 1937 and continuing through June 1938 was published a series of briefs on which the radio programs for that season were based. Since most schools have files of HYGEIA these briefs will not be republished; but the 1938-39 series of dramatizations will be based on the same material. Teachers can continue to use the 1937-38 briefs already in their possession. Two programs only will be changed. The program devoted wholly to infantile paralysis in the 1937-38 series will be replaced by a program dealing with control measures directed against all communicable diseases. Special briefs for this program will be published in advance of the broadcast. The closing program, which has been devoted to flashes from the meeting of the American Medical Association, will be replaced by a program dealing with questions about health and how they can be answered. Briefs for this program will also be published in advance of the broadcast. It is probable that special broadcasts will be arranged, if it seems desirable, covering the topic of infantile paralysis and the news of medical progress from the meeting of the American Medical Association, which will be held in St. Louis, probably in May 1939. Additional helps include a workbook (Johnson Publishing Company, Richmond, Va.) under the same title as the program. A series of selections from the 1937-38 series will be published in book form (E. P. Dutton & Co., New York) with appropriate explanatory material. This book, published by authority of the trustees of the American Medical Association and with the permission of the National Broadcasting Company, will be ready soon after the schools open.

All dramatic presentations in the 1938-39 series will be entirely new.

The opening date, the day of the week and the hour at which the program will be broadcast are not as yet determined. They will be announced in HYGEIA for October together with a revised list of program topics. Poster announcements for use in schools and circulars descriptive of the program are in preparation. Teachers and others

interested may request copies from the Bureau of Health Education (until recently the Bureau of Health and Public Instruction) of the American Medical Association. Posters and folders will be distributed gratis, in quantities which can be put to constructive use locally. It is asked, however, that requests be held down to quantities as small as possible.

The program will be broadcast over one of the networks of the National Broadcasting Company. At this time we are not informed which network will be available. In this connection it is important to note that this program is a sustaining program; that is, one from which the network and affiliated stations do not derive any revenue. It is broadcast as part of radio's contribution to health education. Local stations, therefore, except those owned by the National Broadcasting Company, are not required to broadcast the program. Whether or not they broadcast it will depend largely on whether there is evidence of local interest in the program. This is largely a matter of local stimulation. School boards, superintendents, principals and teachers connected with school systems in which it is desired to use the "Your Health" program as an aid to health teaching are advised to communicate with local radio stations on both the Red and the Blue networks, expressing interest in the program and requesting that it be broadcast locally. Medical societies and women's auxiliaries have been requested to do likewise. The fact that this program has received the award of the Radio Institute—the only health program to receive such an award—and the fact that this institute is composed in considerable part of educators should be sufficient evidence that this program will be among those sustaining features which will reflect credit on any radio station broadcasting it.

While many schools are now supplied with radio receiving equipment there are still some which lack these facilities. For these schools it is suggested that portable radio receivers can almost always be borrowed locally for use in classrooms. In rural schools, radios in teachers' cars have been used successfully in receiving the program.

It is emphasized again that this program is not intended to be in itself a complete course in health education. While it covers all the important topics it cannot cover them completely. Radio alone can never take the place of classroom instruction. The program "Your Health" is intended to supplement health teaching in the schools, not to supplant it. Its purpose is to present health situations in vivid, interesting dramatic form, thus bringing them to life and helping to fix in the minds of listeners facts which might otherwise be regarded as dull and uninteresting.

Watch HYGEIA for October, and watch the local radio columns in daily newspapers for announcement of the date, the day and the hour when the medical profession of America with the cooperation of the National Broadcasting Company will again offer the health education program identified by the toast:

TO AMERICA'S SCHOOLS—YOUR HEALTH!

For athletes and those interested in athletics the October keynote is fall sports. In an article entitled "On the Altar of Speed," *Alfred E. Parker* sounds a warning and voices a plea for moderation.

Forecast for October

Time marches on, and ushers in the new season. Will you be able to enjoy those crisp October days to the full? Will you anticipate each new one as a fresh adventure in living—or will it be "just another day" to drag through? October days, tangy, exhilarating, vital, will give you their best if you are physically and mentally fit to take it. *Hygeia* tells you how:

For the homemaker the October keynote is fall housecleaning. *Lou Tregoning's* article on outwitting homemaker's fatigue is full of practical points on ways and means of conserving energy and taking the drudgery out of household tasks. For her family's sake as well as her own, every homemaker should avail herself of these hints for a pleasant, painless household routine, so that the end of each more or less perfect day will find her not cross, irritable and exhausted but rested, refreshed and ready to enjoy her home and family.

For the men who man the fleet, the October keynote is Navy Day (October 27). In "Tell It to Rogers," *Alwyn W. Knight* shows how the Red Cross helps keep America's defenders mentally alert and free from worry.

Other important keynotes: "Magic Bullets," an article on progress in the control of disease by the use of drugs and chemicals; *Dr. Donald B. Armstrong* is the author. "Can 'Sinus' Be Cured?" a discussion by *Dr. Louis M. Pearlman.* "Speech Problems and Mental Health," analyzed by *Bryng Bryngelson.*

NORMAL ABNORMALITIES

(Continued from page 786)

Problems of Physiologic Epochs

The individual is apt to be particularly upset and to find his problems accentuated during such periods of rapid physical change as adolescence, pregnancy and early senescence. A knowledge that physical and mental states go hand in hand and are mutually interrelated should help us to understand ourselves better during these difficult periods.

To the well adjusted, mature person, nothing that happens is very unexpected or strange or alarming. But fully matured, fully controlled persons are exceedingly rare! Most of us are grown-up children, lacking more balance and self understanding than Winchell's men of Broadway who "spend money they haven't earned to buy things they don't need to impress people they don't like." Occasionally—or oftener—most of us need some one to hold our hand and tell us how nice we are.

There are some things we can do for ourselves. We can reassure ourselves that things are not as desperate in reality as they may appear. We can, like the Negro mammy, learn to "wear the world like a loose garment." Best of all, we can make habitual some of the positive principles of mental hygiene. Some of these are:

1. Sound physical health promotes the development of wholesome emotional responses. Sunshine, a reasonable diet, and periods of relaxation and play are important factors in physical and mental well-being.

2. The most wholesome enterprises are those in which the individual can participate wholeheartedly.

3. Unnecessary and enervating conflicts often arise between normal personal desires and social customs. The individual must strike a balance, sometimes withholding personal gratifications in the interests of the social good and sometimes working for more useful group standards.

4. Comparisons and competitions usually are vicious technics. The value of a way of life can be found more happily apart from the desire to surpass others.

5. Few situations impose hopeless handicaps upon individuals.

6. A situation which appears desperate may be attacked
   (a) by seeing a humorous side
   (b) by remembering that others have faced similar obstacles and somehow gotten past them
   (c) directly and to the best of one's abilities even though an entirely satisfactory outcome cannot be expected.

7. A person may gain insight into his own difficulties by observing closely that behavior of others which annoys or disturbs him.

8. Growth is essential to mental health: it involves initiative and effort on the part of the individual who constantly must be alert, extending his horizons.

9. The sort of emotional maturity which we prize most highly is characterized by persons who
   (a) deal with situations dispassionately
   (b) find satisfactions in their daily activities and are not dependent upon the thrills of extreme behaviors
   (c) are actively interested in furthering social values
   (d) can distinguish between important and secondary matters
   (e) enjoy the company of others but are not dependent upon it.

10. Daydreaming as planning may be constructive; daydreaming as fantasy living may be harmful.

11. Disagreeable obligations are intensified by attempting to ignore or delay them; executed promptly and as a matter of course, they consume a minimum of mental energy.

12. Because of that human tendency to "see what we want to see," we should not conclude too hastily that we are "right" on a controversial subject.

13. The individual who devotes a large part of his time to activities which do not interest others should question himself first rather than his friends' emotional reactions.

14. It is better to live primarily in the present than either in the past or in the future. We should learn from the past but not romanticize it unduly. We should look to the future but not stumble in taking the next step towards it.

15. The best work is done by happy, integrated persons. There is a definite place for the creative, imaginative work of the "unadjusted," but our main reliance for stability and orderly development must be placed in those who bring at least a fair amount of objectivity to their tasks.

16. Emotional balance and maturity are not inborn gifts; rather they are the product of many successful adjustments to many kinds of life situations.

17. Every one needs close friends with whom he can share his successes and sorrows, his hopes, his plans, and his fears.

18. Every one needs to know that the chances for mental health throughout life are predominantly in his favor; in the event of mental "breakdown," he needs to know that chances for recovery are good.

19. Appearing and acting happy, whatever our inward state, has salutory effects upon ourselves and upon others.

20. Happiness seems to result, not with the possession of property or with static achievement, but, rather, in the process of moving from poor health to better health, from discomfort toward euphoria, from being ignored towards being loved, from failing towards succeeding, from monotony towards new experience, from danger towards security. We should consciously attempt to understand and bring about the conditions of happiness for ourselves and others.

21. Periods of quietness and apartness are all but essential to mental health. Every one needs such occasions of contemplation and deliberation as aids in evaluating the past and planning the future.

Mental "jags" are as wearing to mental health as physical "jags" are to physical health. Attention to the rules of mental hygiene, as to the rules of physical hygiene, pays high health dividends. Weaving the principles of mental hygiene into the pattern of daily living makes for balance and strength. Developing personality is the process of making these principles dynamic. It is as simple as this and as difficult. It goes on as long as life.

(Continued on page 852)

Century Photo

ONE OF THE THINGS THAT PARENTS MAY DO TO START THEIR CHILD OFF RIGHT ON HIS FIRST DAY AT SCHOOL IS TO HAVE ANY PHYSICAL DEFECTS CORRECTED DURING THE SUMMER.

SCHOOL and HEALTH

Conducted by **J. MACE ANDRESS**, *Ph.D.*
67 Clyde Street *Newtonville, Mass.*

THE CHILD'S FIRST DAY AT SCHOOL

THIS IS one of the most important days in a child's life. It is the beginning of a new epoch—a start in a long journey of many years leading from grade to grade and possibly through high school, college, university or technical school to a learned profession. It may be the beginning of a career of success and happy living or one of failure and unhappiness. The entire future of boys and girls does not depend on the first day at school, but it often plays a conspicuous part in life's drama.

Few adults realize what a sharp break occurs in the child's life on this momentous occasion. Every child at birth is dependent on others. Of all creatures the human baby is most helpless for the longest period of time. In the home his desires and needs have received special consideration from the family. He has been free within certain limits to talk, play, touch, handle and experiment with things. Social adjustments have been pretty well worked out, so that in general he knows what to expect from his father, mother, brothers and sisters and how to get along with them. He looks on himself and is regarded by other members of the family as a person of some importance.

And then he is suddenly plunged into a strange world, an unknown environment. Nearly everything is different. The people are strangers. Perhaps he has never before seen the teacher and most of the pupils. The schoolhouse and room do not look the same as his own home. The desks, chairs and general equipment are not familiar. There are new rules and regulations. He finds it difficult to understand just what he may or may not do. His personal liberty is definitely curtailed. It is quite a novel social problem to get along with teacher and pupils. In addition he may find it hard definitely to face the educational problems which the school presents. Little wonder then that the first day of school to some children is a day of terror and to all children an experience which threatens their security.

Yet how important it is that this first day should spell success and happiness. With such a start the second day is well set for satisfying experiences, and then the third and so on. Education thus becomes an increasingly intriguing journey. Wholesome interests and attitudes are built up and the foundations are laid for effective living.

Let the child start the first day with failure and fear, and how different and gloomy is the picture. He develops a spirit of antagonism toward the teacher, fellow pupils and the work of the school. He may distrust his own powers and become afraid of his own shadow.

There are a number of things that parents and teachers may do to see that children get the right start. When vaccination is required for school entrance it is a good plan to have this taken care of during the summer.

As far as possible such repairs as dental care, the removal of diseased tonsils and adenoids, eye examinations and the fitting of glasses should be out of the way before the opening of school so that children may be as free as possible from physical pain and mental anxiety.

It is important that the idea of going to school should be agreeable to the child. Parents should not make threats or unpleasant associations with the school, such as were suggested by the mother who said, "Wait until you get to school. The teacher will make you toe the mark." Instead the parent may refer to the fun in beginning school, how nice the teacher is, how the children love to build houses with blocks and learn to read stories in their new picture books. The idea of the first day at school is thus anticipated with pleasure. It takes on a certain amount of familiarity.

To increase this sense of familiarity with the school and encourage a feeling of security it is a good plan to have children visit the school before entering. The month of June is usually a good time. The visit should be short, not much more than a half hour. The child should be introduced to the teacher. He then notices that other children of his own age are having a good time, and in some cases he may join them in their activities. When the day arrives everything should be done to make it serene. Johnny is fussy about his breakfast; now is not the time to be too insistent. Disputes and quarrels in the family should be avoided. Mother will probably take him to school. She stays long enough to see him become interested in some activity and then tells him she will come back later to get him. This is quite important, for some children, especially the younger ones in the nursery school or kindergarten, may become terrified if they suddenly discover that Mother has disappeared.

What the parent or teacher can or should do will depend somewhat on the child, teacher and school. The problem varies somewhat as to whether the first day is spent in a nursery school, kindergarten or first grade. The same psychologic principle holds throughout; namely, that the child start his school life pleasantly and successfully. In the case of the younger child the first day may be made a little shorter, and Mother may come back earlier. Questions such as "Where is my mother?" "When will she come back?" should be answered patiently and as many times as asked. Too much attention should not be given to the child's crying. He should be led to become interested in some activity. Above all else a child on his first day of school should not be called on to do something beyond his power. His successes should be capitalized and his failures largely disregarded.

Little Journeys Among High Schools: I

Public Health Makes an Ally of Youth

JEAN V. LATTIMER
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Massachusetts Department of Public Health

This is the first of a new series of articles for high school teachers which is to run through the year. We are to profit from the keen observations of a trained health educator. The work of the author brings her in contact with health education work in the secondary schools of Massachusetts. Each month she will tell us about the most distinctive activities she has met in her travels.

SEVERAL years ago a public health educator while returning from Europe was asked by a fellow passenger, "What is your profession?" When she responded, "I am in public health," the reply was, "Well, what can you do in public health? You certainly don't supervise garbage collection or inspect water supplies!" This is an illustration of the fact that the general public has not yet realized the broader aspects of the public health field.

That the public of tomorrow is being enlightened is illustrated by the following narrative. In one senior high school which I visited I found a class in citizenship studying a definitely organized unit on the social and economic values of health, termed "The Meaning of Public Health."

That the interest of the adolescent, with his present realistic approach to life, is particularly appealed to by a study of the actual facts proved to be the case in this particular group. One member of the class had read in a newspaper that the U. S. Public Health Service had made a recent survey as to the estimate of illness and its financial cost. At the teacher's suggestion the class wrote for the pamphlets concerning this survey. The fact that such information could be obtained from the U. S. Public Health Service gave the class a consciousness of one of the functions of this important governmental agency.

To humanize this rather dry statistical approach the class got the figures together in terms of a human story, "Our National Health Report" (see table below).

On the wall were colorful graphs and charts which illustrated much of this information. I asked the teacher how the class had found time. The explanation was in the cooperation secured from another teacher in having such graphs and charts made as a part of the mathematics instruction.

One boy in the class reported that he had read in the government reports that the medical and public health scientists had estimated that it would be possible to cut one-fifth or more from this appalling national sickness and disability bill.

During class periods lively discussions were had on such questions as: Is good health or better health possible for every one? How should an education help a person in raising his health status? What opportunities are now offered for learning about health? How is the humanitarian point of view in regard to health related to the eco-

Our National Health Report

Date: Any winter day	
Family Head: Uncle Sam	
Family Size: 130 million members	
Members Sick Today	
In the nation	6,000,000 persons
In any town of 5,000 population	200 persons
In any city of 100,000 population	4,500 persons
In any city of 500,000 population	22,000 persons
Sickness During 12 Months	
In the nation:	
Illnesses disabling for a week or longer	22,000,000 cases
Average duration of cases disabling for a week or longer	57 days
Time lost by the average person from work at home, in industry or at school because of illnesses disabling for a week or longer	10 days
Total Time Lost from Usual Activities	
Illnesses disabling for a week or longer	1¼ billion days

nomic point of view? Which is cheaper—prevention or cure?

The realization that there is always a social aspect to illness had been vividly brought before this class by a case study. The illustration used was that of a high school boy, John Andrews. John had a bad cold. It was February, and he had let himself get run down during the winter months. When this cold came on he thought he would just ignore it, so he came to school as usual; but after a week he found he couldn't hold out any longer. The following two weeks he did not appear in school. He had been sick in bed and had had to have several visits from the doctor. In the meantime he had missed taking part in one of the most important athletic meets and a school party, and he was far behind in his class work. At the close of this analysis one boy's reaction was, "Gee, if John had taken care of that cold, he might not have given his mother so much trouble, and his dad might not have had to pay those sickness bills."

Another member of the class told about an industrial plant which would not employ any applicants unless they presented a clean bill of health.

A girl preparing for college said she understood the college she was going to enter required a physical examination and the correction of physical defects. "You can't stay in college without being in good physical condition," she said.

Some months before, a dental survey had been made in this particular school. Few corrections were necessary. These discussions reminded the pupils that it was cheaper and more expedient to get these corrections done before graduation.

A bright member of the class said, "It looks as if the scientists have already chased down quite a few of the bugs, but people simply won't put into practice what has already been discovered."

Tuberculosis was used as an example of a disease for which there were already some means of control. This led to an investigation of what percentage of their own high school had taken the tuberculin test the past year and to an educational effort on the part of the pupils as to how this percentage might be raised. The English and art teachers were consulted and gave their cooperation in publicity methods and in the making of posters to focus the attention of the school on this problem.

The fact that this was a class in the social studies made a good setting for the linking together of other factors which indirectly promote or retard public health. For example, reports and assignments were worked out on such topics as better housing, recreation, hours of work and adequate wages. The vicious circle of the relation of poverty to disease and disease to poverty received much thoughtful consideration from the pupils.

The class at the close of this study, in answer to the question, "What responsibility is now being actually assumed by the community for the health of its people?" made a study of its local community health agencies already at work.

In the particular city in which this unit was being taught, there was an organized plan of group hospital insurance. The families of several pupils of this class were already members. The director of the United Hospital Service was invited to give a talk to the group about the plan and to answer their questions.

Such an approach to the study of public health offered many opportunities for this group of senior high school boys and girls to see how the health of the public is an integral part of social responsibility and also how in the end, prevention is not only wiser but cheaper than cure.

A New High for Safety

FLORENCE NELSON
National Safety Council
NEW YORK

Death and permanent and temporary disability resulting from accidents still reveal ghastly figures, but they were reduced last year. Safety education really counts. Every teacher may do her part in this great movement. Miss Nelson reviews our national progress during the past year and points out interesting problems raised by this statistical study.

National Safety Council

ONE WAY IN WHICH KANSAS CITY, MO., ESTABLISHED ITS CHILD SAFETY RECORD.

THE teacher who is interested in planning a well rounded safety program finds it helpful occasionally to review national progress in this field and to compare trends for the country as a whole with those of her own city or school neighborhood. It cannot be said too often that effective safety instruction must be based on the hazards to which children are most frequently exposed. National and local accident facts are a primary requisite in the teacher's kit of safety materials.

We now have preliminary information on the nation's 1937 accident record. While these figures

National Safety Council

ANOTHER MEANS OF IMPRESSING CHILDREN WITH THE NEED FOR CAUTION.

are subject to some revision when complete reports are available, they give us a fairly accurate idea of trends.

Accidents of all kinds were responsible for approximately 106,000 deaths in the United States during 1937. In addition, about 375,000 persons were permanently disabled by accident, and some 9,400,000 received temporary disabling injuries. The four principal classes of accidental death and a comparison with the previous year follow:

	1937	1936	Change
All accidents	106,000	110,248	— 4%
Motor vehicle	39,700	38,099	+ 4%
Home	32,000	37,500	—15%
Occupational	19,000	18,000	+ 6%
Public (not motor vehicle)	19,000	20,000	— 5%

(NOTE: The grand total of fatalities eliminates duplications of about 3,700 occupational-traffic deaths in 1937 and about 3,000 in 1936.)

Large as these totals are, we note with a slight feeling of encouragement the 4 per cent decline from the 1936 figure. Motor vehicle deaths, however, are still climbing to an appallingly high mark and give cause for the greatest concern. While travel by automobile increased 9 per cent during the year, this fact by no means justifies the increased toll of deaths and injuries.

In spite of increased motor travel it is possible to reduce accidents substantially if proper methods of prevention are applied. In fact, during 1937 twenty states actually reduced their death totals, and all but one did this in the face of increased highway travel. These states saved a total of 650 lives. The other states, which failed to adopt necessary measures of education and traffic control, are responsible for the increase in fatalities. In other words, automobile accidents *can* be reduced, and twenty states have proved it during the last year. Each teacher will be interested in studying her own state's record.

Important types of accidents took the following death toll in 1937:

Falls	26,000	Gas poison	1,500
Burns	8,000	Other poisons	2,000
Drownings	7,000		
Railroad	4,000	Miscellaneous causes	15,000
Firearms	3,000		

What did 1937 accidents cost the nation in dollars and cents? About $3,750,000,000! This includes $2,550,000 for wage loss, medical expense and overhead costs of insurance; $870,000,000 for property damage in traffic accidents, and $285,000,000 for property loss in fires.

Children of ages 5 to 14 continue to have the best accident record. The accident rate among school children not only is the lowest now but has actually decreased 15 per cent since 1922, when safety instruction was first undertaken in an organized way. The rate among preschool children has decreased 6 per cent. The rate for all other age groups has increased.

Total accidental deaths of children under 15 years of age fell from 16,200 in 1936 to 15,000 in 1937—a 13 per cent drop. Adult accidents decreased only 3 per cent.

A truly remarkable record in child safety was established in Kansas City, Mo., during 1937. October 6 marked the end of a year during which not a single child was killed in a traffic accident on the streets of that city of 440,000 population. The Kansas City schools have long had a thorough-going program of education, and this, together with aggressive measures for traffic regulation and control, is responsible for the extraordinary achievement.

The great tragedy of the year was the disaster in New London, Texas, in which more than 300 children lost their lives. This explosion focused public attention on conditions existing in school buildings throughout the country. Recently several hundred government allotments have been made for school construction projects in forty-one states, and some $38,000,000 will be spent on this work. School boards in many towns and cities have inspected school properties and have, to some extent at least, eliminated existing hazards.

Getting back to the traffic situation, we find the bicycle adding greatly to the complexity of the problem, especially in relation to children. Over the 3 million miles of roadway in our country travel 30 million motor vehicles operated by some 40 million drivers. Added to these automobiles we have about 10 million bicycles—and the number of bicycles is increasing by leaps and bounds. It is estimated that during 1937 about 1,350,000 were manufactured in this country.

It is not surprising that deaths and injuries in bicycle accidents are increasing. In 1935, 350 persons were killed and 13,000 injured in collisions between bicycles and motor vehicles. In 1936 the number had risen to 650 killed and 25,000 injured.

States and cities are working on this problem, and already laws and ordinances have been passed relating particularly to bicycles. Pending the time when more cycle paths can be constructed and protected roads made available, children should be urged to ride only on quiet streets where traffic is light, to keep near the curb and to obey all the traffic regulations. Under no circumstances can bicycles and automobiles share streets and highways in complete safety. If children are permitted to ride where there are cars, they should be made to realize that they are in constant danger and that only extreme caution will keep them free from accident.

Nearly all the 1937 increase in railroad accidents came from collisions at grade crossings. There were 1,519 of these in ten months, compared with 1,318 the year before—a 15 per cent rise. Only twelve passengers on trains were killed, as compared to sixteen for 1936.

Forty airplane passengers were killed in 1937, against forty-four in 1936. Pilot and copilot fatalities totaled nine, compared with fourteen in 1936. Crew fatalities numbered three in each year. Passenger

miles flown in 1937 totaled 480 million, giving a passenger death rate of 8.3 per hundred million passenger miles.

While records on pleasure flying, student instruction and the like are now available for only six months of the year, it is interesting to compare them with the regularly scheduled flights previously mentioned. During six months there were 842 accidents, resulting in the death of 107 persons. Plane miles flown totaled 45,060,000.

So much for a brief survey of the nation's accident situation in 1937. Will 1938 show a better record? Much depends on the *will* to reduce fatalities and injuries. If we redouble our efforts during the remaining months of 1938, we are bound to get results.

A New Approach to an Old Problem

ETHEL MEALEY
Consultant in School Health Education
WESTCHESTER COUNTY, NEW YORK

How can we enlist the interests and efforts of children in healthy living? Miss Mealey describes in detail how children's ambitions were linked with a knowledge and practice of health. The approach is suggestive.

CAN you remember when you were in the first grade at school? Can you remember anything about yourself as you were then and what you did? In what ways do you think you are different now? Some of us may have to think back fifteen, twenty, thirty or forty years; but in one sixth grade (Hastings-on-the-Hudson, N. Y.; Catherine Moore, teacher) three members of the class had to think back only five years; for twenty, it was six years, and for three, seven years. These questions were given to the pupils with no explanation. They were given a manila folder containing some good paper and were requested to jot down things for a period of one week as they thought of them. The answers to the questions were tabulated and placed on the board. Here are some of the answers to the questions:

I am taller. I wear long pants.
I am older.
I weigh more.
I know more.
I act differently.
I do more things for myself.
I know a lot of people and have a lot more friends.
I have more manners.
I have more brains.
I am a Boy Scout and do a lot of things. I have four badges.
I have more fun. I finished a pewter tray and used three hammers.
I like harder games like we have now. I can run faster than Dad.
I can make things that count. I made a boat.
I have a job and earn money. I paid for my own bicycle.
I can use ink.
I can read books and magazines. I don't like primers.
I can draw what I want to and don't have to trace around things. I made one of the pictures in our room.
I don't remember having fun like we do now. We are learning to ski in gym and I go to the County Center and make marionettes.
I have my second teeth.
I have a swell stamp collection. I didn't have sense enough to start it a long time ago.
I was afraid of people.
I cried every morning when my mother left me. She brought me to school.
I didn't have any muscle. I can do a lot of things now.
I caught a ball sometimes, but sometimes it went right through my arms.
I never knew where the ball was going when I threw it. I am a good pitcher.
I didn't know a green light from a red one and my Mother had to bring me to school.
I sucked my thumb.
I chewed my handkerchief.
I was always biting my finger nails. I don't do that any more.
My handkerchief was pinned to me. I think that was funny, I couldn't use it.
I had to leave my dog at home all alone.
My writing was all sizes and ran up hill.
The first day of school I had on the prettiest pink dress I ever had.
I took a battery and bell to school and the teacher took it away from me.
My teeth were loose and I didn't have any front teeth for a long time.

There were other answers but these give an idea of change as expressed by these pupils. The next questions were: What do you want more than anything else? What do you want to do more than anything? Is there any person, more than any one, whom you want to be like?

These questions brought a variety of answers. However, there was one common element—every answer was in the superlative. Three wanted to be "the best nurse"; four, the "champion swimmer"; one, "the best violin player"; four, "the best base-ball player"; four, "the best actress"; three, "the best radio comedian"; two, "the best G-man," and one, "better than Lawrence Tibbett." As for the person whom they wanted to be like, the radio, the movie and the various sports showed a tremendous influence. Jack Benny, Joe Penner and Eddie Cantor were very popular. Three girls wanted to be like Mae West. One person selected Major Bowes because "He is giving folks a chance to show what they can do." One of the girls who wanted to be a nurse said that she wanted to be like her mother "because everything runs smoothly and without confusion where she is."

Perhaps you are asking, as did the children, "What is this all about; we never did do anything like this before? Is this a new subject?" There were several reasons for the questions. Our problem was not a new one nor one confined to this group of children. These pupils had had five or six years of "health instruction," many "do's" and "don'ts," many promises and threats. "Do this, and you will be strong and healthy." "Don't do this, and you will be strong and healthy." Briefly stated, our problem was, "How can we get the children to want to do the things that we want them to do?" We wanted to provide a new approach and bring new materials to an old problem. We wanted to use the interests and fundamental urges of children as incentives. We wanted to say little about health yet achieve every day healthful living.

By means of our first question we did create certain desirable concepts of change, of growth and development. The children after seeing all the "differences" said that changes had taken place and agreed that they would continue to take place; that changes "just didn't happen overnight" but that they took place gradually and slowly. They were divided as to their opinions about controlling change or "doing something about it." Some children said, "You just have to take it, and there isn't much to do about it. Maybe we can when we grow up." Others thought there might be something they could do. One girl said, "If you want a good cake, you get everything all ready and it is not always the same for different kinds of cake." This group thought there might be conditions more favorable than others for desirable changes. "You might manage things and plan." Then we tried to think of things we could really do ourselves.

So our next question was, "What can I do now that will help me to be 'the best nurse,' 'the best artist,' 'the best swimmer?'" Strangely enough the present and the next six years in junior and senior high school were passed over, and the pupils projected themselves immediately into the desired goals. Only one person, the boy who had paid for his own bicycle, brought the present into the picture. He said, "Save your money for college." It was a new idea that they might be able to do anything at the present time to achieve their goals later. Committees were appointed to investigate the requirements for "a champion swimmer" and the various other interests which had been mentioned. The high school coach was asked about training; a G-man was interviewed; letters were written; books were consulted and reports given. Finally from these data we were ready to begin work on individual plans of living.

The results were interesting. Several very worthwhile projects were started. One was, "What do I do with my 24-hour day?" Another

(Continued on page 847)

The WEIGH of the TRANSGRESSOR (Continued from page 814)

The thyroid gland is of particular interest in connection with obesity because an extract made from it can be used to destroy fat, though not always with desirable results.

It is a somewhat common and comforting idea to attribute obesity to disturbance of the endocrine glands but, like a good many other common ideas, this one has but little basis. While it may be true, it is the exception rather than the rule.

Those who are fat and tend to become fatter frequently maintain with some feeling that they are small eaters, and so they often are. But how often do they eat?

Food intake is governed by appetite and the ability to obtain food, which is closely related to one's income, and also to some extent by habit. And appetite is governed by many factors, among which is the energy output. Fat people tend to be relatively inactive and to indulge in less exercise and certainly less vigorous exercise than those of normal weight. Hence their caloric needs are relatively low because their energy output is relatively low. Despite this, however, they are notoriously fond of foods of high caloric value: fried foods, which are largely fat containing, and foodstuffs rich in easily assimilable carbohydrates, such as pastries and desserts. In the production of obesity the kind of food is as important as the amount, if not more so.

There is still another factor which must be taken into account. The body tissues are fortunately, and sometimes not so fortunately, able to accommodate themselves to circumstances. Thus, exercise leads to muscular development, so that the muscles may be able to answer the demands made on them. In somewhat the same fashion, though not for exactly the same reason, when large amounts of food are consistently and habitually thrown into the stomach that organ tends to expand and increase its capacity. Now, peculiarly enough, the sensation known as hunger is appeased when the stomach becomes conscious of being more or less filled. That is the reason why in times of famine the starving person resorts to anything which will give the sensation of fulness. If the material has little or no food value the hunger sensation will soon return, but the sensation of satisfying fulness can be obtained from a meal of watermelon as easily as from one of beefsteak and potatoes, even though the satisfaction does not last as long.

The fact remains that when large amounts of food are regularly thrown into the stomach it distends, loses part of its ability to contract and eventually remains distended, so that it takes more and more to fill it or even to make it feel as if much of anything has been thrown into it. That is the main reason why the obese individual commonly eats such enormous meals, not because his body needs fuel but because his stomach feels empty when that of a normal individual would be stuffed beyond the comfortable stage. That is why the famous Diamond Jim Brady could consume at one sitting almost incredible amounts of food. Fat people thus often eat more than they should because they feel hungry when they shouldn't, and the more they stuff, the larger their stomachs become—and there you are!

It is also a common idea that fat people are invariably good natured and phlegmatic, though this is far from generally true. On the contrary, they are not infrequently neurasthenic and, when it comes to dieting, notoriously weak willed. They are often plaintive about how little they eat but forget how often they eat, how often they "nibble" when they are nervous or upset and particularly how often they nibble on things rich in sugar—a piece of candy now and then, or maybe a cake or so to pass the time. Did you ever notice what seems to be inseparable from a feminine bridge party? The little dishes—sometimes not so little at that—of nuts and candies? Did you ever compare them before—and after?

But what's the difference? If one has to be fat, why not be fat and let it go at that?

Disregarding for the moment such things as the physical discomfort and even the relative physical disability entailed by obesity, and skipping the fashion question entirely, there are several good reasons why obesity is undesirable.

In the first place, frequent carbohydrate intake means a frequent demand on the pancreas for the ferment necessary for the combustion of sugar. This ferment is insulin, and repeated calls for insulin mean repeated stimulation of the mechanism which supplies it. This leads to an irritability of the mechanism, which eventually becomes set on a hair trigger, so to speak, so that it not only responds quickly but to an excessive degree. The result is the production of periods of excessive insulin secretion, hyperinsulinism, which brings about an excessive combustion of sugar, causing mild symptoms of "insulin shock," weakness, hunger and fatigue. This in turn creates a craving for concentrated foods, such as the carbohydrates and, behold, there is a vicious circle!

Moreover, the end result of overstimulation is fatigue, and there is thus the possibility that the insulin mechanism may become disordered and imperfect in its function; and as the underlying cause of diabetes is a disturbance of the insulin mechanism, the relative frequency of diabetes in the obese may perhaps be explained in some degree in this manner.

In addition, it must be remembered that when fat formation is abnormal the excess fat may be deposited, not only in the usual depots but in any place in the body. Thus, it may be found in such undesirable locations as the heart. In the obese the heart is covered with a heavy coating of fat, which means that there is just that much more work for the heart to do in carrying this extra dead weight. Or it may also be seen as fat deposits between the fibers of the heart muscle, which thereby becomes less able to stand the strain of extra work.

Despite these, as well as other good reasons which might be added, perhaps the most potent causes of attempts to reduce, in women especially, are the dictates of fashion, and it is only necessary to look at the amounts spent for "fat cures" to see what will be done in fashion's name.

[NOTE.—This article will be concluded in the next issue.]

EXERCISE (Continued from page 831)

dry slurs were printed which were not complimentary to the good old alma mater, the impression being given that no college of any real standing would do such a thing and that it smacked of poor sportsmanship. Now it chanced that a splendid Negro halfback was developed at Ashtabula High School. If my memory serves me right he played on both the Case and the Reserve teams at different times and helped them to win from Oberlin. At that very time, strangely enough, was born the spirit of true democracy in Cleveland. Indeed it was found that it paid to be democratic, even as had been discovered by the Duke of York long before. If the patriotic and athletically-minded American will take the trouble to scan the list of first place winners for the United States in track and field at the last Olympics and investigate their racial origins, he too will agree that it pays to be democratic.

But to return to England, it must be said that James II entered more wholeheartedly into the spirit of golf than had his grandfather, Charles I, who was engaged in playing a foursome on the links of Leith, in 1642, when news of the "Irish rebellion of that year" reached him. He had not the equanimity to finish his match but returned precipitately and in much agitation to Holyrood, leaving his three companions stranded and, probably, the bets unpaid. Now this was neither cricket nor golf and was behavior which would scarcely be tolerated today. Even though a man receives word that his wife has left with the under gardener he will finish his match if he is a true golfer. This practice may be the source of that common saying, "The play must go on."

In 1834, William IV became patron of the St. Andrews Golf Club and approved of its being called "The Royal and Ancient Golf Club of St. Andrews." Most of the early and famous courses of Scotland and England were along the coast and near the beaches; but others soon appeared inland and rapidly increased in number, and thus it was inevitable that the game should be exported to the United States.

And here it becomes necessary to refer again to the tribe of Reid, for it was John Reid who, having played the game in England, had laid out in his pasture in Yonkers, N. Y., the first American course. This course belonged, according to *Time* (Nov. 29, 1937), with the oldest country club in this country which has had a continuous existence. At first golf was looked at askance as being a silly game; but, silly or not, it has developed in popularity until there is no doubt that it is played by more of our citizens than any other outdoor game. The accompanying figures as to its status in the United States of America in November 1937 were kindly furnished by the magazine *Golfdom*, published in the flourishing midwestern city of Chicago.

GOLF COURSES IN THE UNITED STATES

Private clubs with 9 hole courses	2,189
Private clubs with 18 holes or over	1,325
Daily fee 9 hole courses	561
Daily fee courses, 18 holes or over	447
Municipal 9 hole courses	295
Municipal courses, 18 holes or over	296
Total clubs or organizations having golf	5,113

Disregarding the "or over" this means 64,629 golf holes. If, on a good Sunday, a foursome was playing on each hole, there would be 258,516 persons playing simultaneously, and more than a million players could perform on these courses in a day. Every man, woman and child in Atlanta could play at the same time. And, speaking of Atlanta, it comes vaguely to my mind that it already has some connection with golf. During the day a tournament could be played with the entire populations of St. Paul, Akron and Memphis competing with Atlanta.

If each player used six clubs and lost two balls and carried one bag and wore one pair of golfing shoes and sundry other clothing adapted to the game, and if there was one caddy to each twelve players, it takes no great ability in mathematics or economics to deduce that one day's play of golf may be an important factor in the economic welfare of the land. If each player amassed a dozen units of health and a modicum of pleasure the imponderables are beyond computation. And it must be recalled that there are several days during a year when golf may be played in any part of the country. There are birds of passage who migrate according to the climatic conditions and play nearly every day during the year; but they are not a great percentage of the entire family of golfers, and the question may be raised whether they do not overdo it and tend to step out of the strictly amateur class. In passing, it might be remarked that this, formerly dubbed an old man's game, has recently been called a young man's game because the vast majority of really excellent players are young. But really it is a game for the ages, all ages. The longest drivers are young; but I am informed that it is probable that there is no better putter operating in our fair land than Mark Harris, who is said to be verging on four score at present and didn't start trying to be a good putter until he was an old man, according to common standards. He has written an excellent book on putting.

It is perfectly evident that the United States has embraced golf, its club houses being more luxurious, its courses more numerous and perhaps better and its players more numerous if not better, than those of any other country.

To me it seems that the Encyclopedia Brittanica, that staid and dignified compendium of knowledge, reaches its artistic zenith in defining golf. "The game of golf may be briefly defined as consisting in hitting the ball over a great extent of country . . . and finally hitting or 'putting' it into a little hole of some 4 in. in diameter cut in the turf." There is *magnum in parvo*. And what a delicious phrase is that "over a great extent of country." One wonders whether the writer set the thing down with his tongue in his cheek. And how faithfully the average player's performance conforms to the definition. The dub should find great comfort in this sturdy backing by an unquestioned authority.

The game is unique in so many particulars that it stands alone in "uniquity." In the first place it is unique in being entirely offensive. Billiards, which resembles it in many ways, such as using a stationary ball, allowing the player all the time he wishes to study and make his shot, and requiring understanding and use of the spin of the ball, gives great opportunity for defense of the most exasperating sort, as any one knows who has played against a "hard leaver." In golf the player has exclusive rights to his own ball, and his bad lies are due to his own

(Continued on page 854)

COULD A BLOOD TRANSFUSION BE THE CAUSE OF A SEVERE CASE OF HIVES?

Wallace W. Kirkland

QUESTIONS and ANSWERS

Salt Consumption

To the Editor:—How much salt should a normal, healthy person consume daily? Is there a possibility that such a person can get more salt than is good for him? Is the addition of potassium and magnesium salts to sodium chloride a logical means of decreasing the harmful effects of salt?

F. R. J., New York.

Answer.—A good balance for salt can be maintained on 5 Gm. daily. The average human being consumes from two to four times as much as this. It is probable that no injury results from this excess, since even after long-continued use no symptoms of a disturbance are seen. Harmful effects of a very large excess would result if continued long enough; but reactions of the individual make it impossible to take such amounts. If one did succeed in taking harmful excess there is little evidence that potassium or magnesium salts would be of benefit.

While there is a tendency to take more salt than is necessary, there is little evidence that any benefit would result from decreasing the intake.

It is much more important to realize that sweating leads to excessive loss of salt from the body and therefore should be compensated for by adding a little salt to drinking water—just enough to avoid a distinct salt taste. This is a good way to avoid the extreme weakness and even the tremors and cramps that may result from excessive sweating.

Hives Resulting from Blood Transfusion

To the Editor:—Could a severe case of hives be caused by a blood transfusion?

W. K. D., Pennsylvania.

Answer.—A blood transfusion may cause a severe case of hives if the individual from whom the blood is taken is sensitive to certain foods which are eaten hours or days after the injection by the patient who receives the blood. If the donor of the blood, for instance, is sensitive to eggs, he may have certain antibodies in his blood as a result of sensitivity to this food. The individual to whom such blood is given may then become sensitive to even the slightest traces of egg in his diet for weeks after the transfusion. This sensitivity will, however, wear off completely in time since it is of a temporary nature. In addition to this possibility there may be unusual blood incompatibilities, not detectable by the ordinary tests done before a blood transfusion, which may cause such a reaction.

Sneezing

To the Editor:—What stops a sneeze when you put your finger to your nose?

R. M., New York.

Answer.—A group of nerve cells in the medulla of the brain regulates respiration. These cells are particularly sensitive to chemical substances, but their activity is also modified by sensory nervous impulses which come in from various sources. Stimulation of the hair in the nasal passages, for example, greatly excites the respiratory center and results in the contraction of many muscles followed by the violent expulsion of air. This is a sneeze. Stimulation of pain endings in the nose, on the contrary, may result in inhibition of the respiratory center and a temporary cessation of respiration.

There are many sensations from various parts of the body that affect respiration as thus described. Some of them seem to be incidental without any great physiologic importance. Pressure around the lips or nose is an example. Pressing the nose or biting the lips sends sensory impulses to the medulla which inhibits the respiratory center. The desire to sneeze is thus reduced. The mechanism is plain, but the physiologic value of it is not evident.

Expenditure of Energy in Climbing Stairs

To the Editor:—I am a member of an architectural commission appointed by the board of education to make a survey of the New York City school planning, design and construction. In this connection, there is a matter which the commission feels is a vital one; namely, the subject of stair climbing. In New York City most of the schools are three stories and many are four and five stories high. The type of duplex stairs which has been adopted as a standard in New York City requires a story height of 15 feet, 1 inch instead of 13 feet, 6 inches, which is customary elsewhere. Furthermore, these stairs are designed with a riser 6.98 inches with a tread of 10 inches. Are there deleterious effects on young children who have to climb stairs under these conditions?

R. E. M., New York.

Answer.—The answer to this question involves two points: (1) the expenditure of energy in climbing stairs, and (2) the optimal rise (height) and tread (breadth) of the steps of a staircase to reduce stumbling and effort.

The average person expends the same amount of energy walking up (from seventy-two to ninety-two steps a minute) an average flight of stairs (fifteen steps, each having a rise of about 8 inches) as he does in walking on the level fifteen times the vertical height of the staircase; that is, if the staircase is 15 feet high, as much energy will be expended to climb it as would be expended to walk 225 feet on the level. Thus, a person climbing a flight of stairs rising through one story 15 feet high would be expending the energy required to walk about 1/24 mile on the level. Climbing four such stories would be equivalent to walking about 1/6 mile. Descending requires one-third the energy of climbing. Thus, descending 15 feet would be equivalent to walking 75 feet on the level; or descending four stories would be equivalent to walking 300 feet. Thus, climbing and then descending four stories would be equivalent to walking less than 1/4 mile on the level. If this was done four times during the day, it would be equivalent to the exercise obtained by walking 1 mile. On considering the time factor, if one climbs four stories (each 15 feet high) in two minutes, the energy expended would be equivalent to running 1/6 mile in two minutes, or to a "jog" for about 1 1/2 long city blocks. This should not be injurious to any healthy boy or girl.

Nation's Schools

FOR COMFORT AND CONSERVATION OF ENERGY, WHAT ARE THE BEST DIMENSIONS OF RISER AND TREAD IN A STAIRWAY?

In regard to the optimal dimensions of the riser and tread of the stairs, those given in the question are in harmony with those reported by Robinson (The House of Health, 1925, p. 157). A riser of not more than 7.5 inches and a tread of at least 8 inches is recommended for domestic dwellings. Stone (Hospital Organization and Management, p. 284) recommends a riser of 6.5 inches and a tread of 11 inches for hospitals. The architects of the Chicago public schools use a 6 inch riser and an 11 inch tread, although by law they are allowed an 8 inch riser and a 15 inch tread. There is no direct scientific evidence which establishes the dimensions of the riser and tread of a staircase that may be climbed with the least amount of effort by the average person in the different age groups. Neither is there scientific evidence to establish the dimensions of the riser and tread which are least conducive to stumbling in the different age groups. If such evidence is available it is buried in the literature. However, everyday experience has shown that the risers and treads described here are comfortable and that after a few trials, persons become conditioned or used to almost any sort of a staircase that is not too steep.

Tickling

To the Editor:—Why is it that when one tickles oneself it doesn't produce the same sensation as when any one else does it?

A. M., New York.

Answer.—The question is based on a statement which is not entirely correct, for one may easily tickle oneself inside the nose. It is true, however, that one does not tickle oneself by rubbing one's own side. The reason lies in the activity of the brain itself. Sensations are brain interpretations of nervous impulses that come from sense organs. The interpretation may be modified by past experiences and by other sensations present at the moment. The impulses may even be ignored and all naturally resulting reflexes inhibited. It is well known that often a patient cannot produce some of the abdominal reflexes himself, but they may be easily elicited by an examining doctor. If one rubs one's own ribs the impulses that come in are interpreted merely as touch. But when some one else does the stimulating, other sensations are involved, and although the skin is stimulated in exactly the same way as before, the sensation is one of tickling.

(Continued on page 862)

SCHOOL AND HEALTH (Continued from page 842)

one was started as a result of a boy's question, "Are you going to tell me I have to drink three glasses of milk?" In answer to his question, the teacher said, "No, I shall not advise you to drink milk, but I do advise you to ask Dr. Mink what would be better for you to do." Then it was suggested that we try some experiments with plants and seeds to find out whether there are conditions for favorable growth which can be controlled. The children became more interested in the health examination. They wanted to know, "How good am I?" They asked for a physical fitness test, "like they have in junior high school."

In all our discussion the word "health" was mentioned only when necessary. The emphasis was placed on "efficiency." Incidentally, this word was added to their vocabulary. In the class discussions the meaning had been used frequently, but the word was finally introduced by asking them to see whether they could find one word that included what we were talking about. A cue was given to look for a nine letter word beginning with "ef." This was the keynote then of all the individual plans which were worked out. They worked out the meaning of individual efficiency and group efficiency; they applied the ideas so developed not only to their individual plans but also to their everyday living.

Food Experiments for the Classroom: I

Starches and Sugars

ETHEL AUSTIN MARTIN
Director of Nutrition Service
National Dairy Council

Experiments in the classroom help to vitalize teaching. Learning becomes an adventure to the children. They wonder how the experiments are coming out. They remember these results better than they would if they simply read facts from a book. Mrs. Martin's work has been carefully checked in the schoolroom. We hope many teachers will find her guidance helpful during the year.

OF ALL the factors in our environment, none plays a more important role than the food we eat. Thus as the school curriculum tends more and more to be shaped by the environment of the children, greater emphasis is placed on the study of food. Food study may be introduced as a unit in itself or parts of such a unit, incorporating it at the many different points in regular classroom work where the subject fits most naturally.

The present series of food lessons is based on experiments with foods, designed to be conducted by the children themselves under the direction of the classroom teacher. The experimental method is employed because it encourages children to observe carefully and to draw conclusions independently on the basis of facts presented. In addition this approach offers opportunities for pupil participation in classroom activities, a method which contributes to the pleasure and effectiveness of the learning process.

The ultimate aim of experiments with foods is more intelligent use of foods—better food habits and eventually better nutrition. In other words, just learning interesting facts about food with no practical application to everyday living fails to take advantage of the most important function of such experiments.

What Foods Do for Us

Our physical needs are met largely by the foods we eat. And this is true because, taken together, the foods we eat daily contain dietary essentials which satisfy our basic requirements for growth, for activity and for health. Foods perform three functions in the body: They furnish energy; build and maintain body parts, and regulate body processes. The different dietary essentials may be grouped under these functions in order to show the particular contribution of each to the needs of the body. There are six dietary essentials in all. In the following list, note that some essentials are given twice. This is because they are used by the body for more than one purpose.

1. Food as a source of energy or fuel for the body:
   - Carbohydrates
   - Fats
   - Proteins
2. Food as a source of material for the building and maintenance of body structure:
   - Proteins
   - Mineral Elements
   - Water
3. Food as a means of coordinating and otherwise regulating body processes:
   - Mineral Elements
   - Vitamins
   - Water

In the successive articles of the present series each of these dietary essentials will be considered. The first experiments will serve to identify single dietary essentials, such as carbohydrates, fats and proteins in different foods. Later, individual foods will be "taken apart" to see which dietary essentials they contain. Finally, there will be tests to show ways in which foods are digested and made ready for assimilation in the body. The energy foods will be considered first, and of this group the carbohydrates are discussed in the present article.

Energy Foods

The first requirement of the body is for fuel which supplies energy. The body is an active, functioning machine, spending energy in the form of work and heat, and requiring that this expenditure be made good by fresh supplies of fuel in the form of food. Carbohydrates and fats are our chief energy foods, but because we eat so many carbohydrate-rich foods, about two thirds of our energy is derived from carbohydrates.

Sugars and starches are examples of carbohydrate foods. Refined white sugar is the commonest form in which sugar, as such, is used. Honey, syrups and molasses are other forms of sugar. All foods which taste sweet contain some form of sugar, as, for example, ripe fruits and dishes which are made sweet by adding sugar. Candy, which is very sweet, is almost all sugar. A few foods contain sugar which is not strongly evident from their flavor. The first experiment will show that onions belong in this group. Milk is another example of such foods.

White sugar is one of the few foods which furnishes only one dietary essential. Sugar is pure carbohydrate. So far as energy alone is concerned, then, it is a good food. But the body has other needs; therefore it is important that sugar not be allowed to furnish too large a proportion of our total energy needs. It is estimated that sugar supplies about one-fourth the energy needs of American people at the present time. The per capita consumption of sugar is well over a hundred pounds yearly.

Unfortunately, concentrated sweets tend to lessen the appetite for wholesome, bland foods and, when taken in too large amounts, they irritate the digestive tract. For these reasons it is well to form the habit of taking sugar in quantities only sufficient to make other foods palatable, as, for example, in mildly sweet puddings and ice cream, which carry other dietary essentials as well; in unrefined forms such as dark molasses, and

in natural combinations in foods, such as fruits.

Starches also are available in many forms, usually combined in foods. Potatoes, flour, macaroni, spaghetti, breakfast foods and bread are good examples of starchy foods. Corn starch, used to thicken sauces and puddings, is made from corn and is practically a pure form of carbohydrate. Starch is changed to sugar in the digestive process before it can be used by the body.

Use of Experiments in the Classroom

Before introducing the experiments, teachers can lay an adequate groundwork for them by class discussion of body needs and the food essentials which satisfy these needs. Health and physiology textbooks amplify the brief points outlined under "What Foods Do for Us." Only the form of the experiment should be described in advance; the expected reactions and the conclusions to be drawn should be left to the pupils to discover for themselves.

Conducting the Experiments.—The experiments may be performed as a demonstration by the teacher if time and equipment are limited. Preferably, however, the children should have some part in the work. Usually it is not desirable for all the children to perform all the experiments. It should however be arranged so that each child is responsible for at least one. The experiments themselves and the equipment have purposely been kept simple enough for the ordinary classroom.

Writing Up Experiments.—It is not necessary for the children to write up the experiments, although this may be done if the teacher prefers. It is far more important that the pupils understand fully what they have done and that application be made to their daily food habits.

Experiment with Sugar

Problem

To test for sugar.

Materials

Corn syrup
Rice
Onion
Apple
Hard boiled egg white
Test tubes
Knife
Fehling's solution
  Part I
  Part II

First Experiment

Place about 1 teaspoonful of corn syrup in a test tube. Fill the test tube one-third full of water. Add 10 drops each of the clear and the blue parts of Fehling's solution. Heat the mixture in a test tube gently until a reddish color forms. This reddish color indicates that sugar is present. Test each of the other foods suggested under "Materials." To test the onion and apple, use pulp obtained by scraping them. Cut the egg white in fine pieces. Use all other foods in the same amounts and with the same quantities of water and Fehling's solution as are suggested for testing corn syrup. Note carefully which of the foods show a test for sugar.

Additional Foods

Other foods may be brought from home to test. It is suggested that foods be omitted which do not show clearcut positive or negative results.

Results

Corn syrup, onion and apple give the reddish color and therefore contain sugar. Rice and egg white do not contain sugar.

Conclusions

Sugar is identified in foods by testing them with Fehling's solution. The presence of sugar is easily detected by the reddish color which appears.

Experiment with Starch

Problem

To test for starch.

Materials

Corn starch
Baking soda
Sugar
Potato
Egg white
Knife
Test tubes
Tincture of iodine
Dropper

Second Experiment

Place about ½ teaspoonful of corn starch in a test tube. Fill the test tube half full of water. Add to the mixture a drop of tincture of iodine, and shake. Notice the blue color. Make the same test with baking soda, and notice the difference in color. When a blue color is formed on the addition of iodine, starch is present. Try each of the other foods suggested under "Materials." In all cases soften the food thoroughly with water as is suggested for the corn starch. In the case of potato and other solid foods, it is best to use scrapings. Look for the blue color in the water or on the bits of food. Note carefully which of these foods show the blue test for starch.

Additional Foods

Other foods may be brought from home to test; these may include oatmeal, cornmeal, bread, ripe banana, apple, meat and milk.

Results

Corn starch and potato give the blue color which shows the presence of starch. Baking soda, sugar and egg white do not contain starch. In the group of additional foods suggested, only the cereal grains and bread give the test for starch.

Conclusion

Starch in foods can be identified with iodine. It is a simple test showing a blue color when starch is present.

Suggested Activities

The experiments just described have been planned particularly for the intermediate grades. Many of them can be used equally well in upper grades if they are new to the students. In upper grades more equipment is usually available and more elaborate experiments may be performed. For example, as an extension of the starch test, students may examine raw and cooked starch under a microscope to see the effect of moist heat on starch grains and to discover for themselves why it is desirable to cook starch. At both intermediate and upper grade levels there are endless opportunities for integrating these experiments with social studies—learning the food habits of other peoples, the sources of our food supplies and the methods of their production and manufacture.

Children in the lower grades may do a simple sugar test by merely tasting samples of different fruits to note their sweetness. This could be done chiefly to draw attention to the fact that fruits are a mild, palatable source of sugar and good for them to eat.

References

Teacher: FOOD PRODUCTS by H. C. Sherman. Price, $3. Pp. 674. Illustrated. New York: The Macmillan Company, 1933. An excellent basic text containing information on foods—production, manufacture and use. An invaluable source of information, useful throughout any food unit.

Pupils: FOOD AND YOUR BODY by Mary Pfaffmann and Frances Stern. Price, $2. Pp. 170. Illustrated. Boston: M. Barrows & Co., 1932. Contains facts about foods told in simple style with illustrations; may also be used by the teachers for suggestions in presenting elementary food lessons.

To Contributors:—*The editor of the School and Health Department will be pleased to receive articles dealing with the actual solution of concrete and practical health education problems in the school. Contributions on general theory are not solicited. Articles must not exceed 1,000 words in length. Stamps should accompany manuscripts to insure their return if rejected. All articles accepted will be paid for at regular rates. Address Editor of School and Health Department of* HYGEIA, *67 Clyde Street, Newtonville, Mass.*

Stephen Deutch

FREEDOM FROM DISEASE, ABUNDANCE OF ENERGY AND ABILITY TO FACE HER PROBLEMS WITH SUCCESS—THESE ARE SOME OF THE REQUIREMENTS FOR THE TEACHER, AS LISTED IN "FIT TO TEACH," WHICH IS REVIEWED BELOW.

NEW BOOKS on HEALTH

Fit to Teach

Ninth Yearbook, Department of Classroom Teachers of the National Education Association of America. Pp. 276. Washington, D. C.: National Education Association of the United States, 1938.

SO MUCH has been written about the health of school children that we are likely to forget the importance of the health of the teacher in promoting the health of children and the ultimate goals of education. The teacher who suffers from some communicable disease such as tuberculosis is a menace to the health of her pupils. But health is more than freedom from organic and functional disorders; it means abundance of life. The teacher needs sufficient vitality and power to carry out her tasks with vigor and enthusiasm. She needs health of mind as well as body—freedom from disease, abundance of energy and ability to face her problems with success. Health is contagious in a sense; a healthy teacher naturally suggests and inspires good health.

The Department of Classroom Teachers of the National Education Association deserves hearty commendation for this careful investigation of the health of teachers. This study has been long in preparation and shows scientific compilation of facts and rational and helpful conclusions. It indicates that teachers have as good health as they probably would have enjoyed had they entered some other profession. It is estimated that only from 15 to 20 per cent lack the vigor necessary to carry on classwork effectively. There is evidence also that the health of teachers is improving. The belief that teachers are largely semi-invalids and physical incompetents is quite unfounded. Nevertheless teachers can greatly improve in their health habits and personal hygiene.

This excellent study investigates every nook and corner of its field and offers definite suggestions for the improvement of the health of teachers. The chapter on Mental Health of Teachers is especially good.

This yearbook deserves wide circulation. Teachers in service will find it helpful and inspiring. Courses in educational hygiene in our teacher training institutions should make liberal use of this volume as a reference book. Its bibliography is doubtless the best one published on the health of teachers.

J. MACE ANDRESS.

Health Knowledge of High School and College Students

By Holger Frederick Kilander. Pp. 8. Ann Arbor, Mich.: Edwards Brothers, 1937.

GOOD teaching depends on a knowledge of what the pupil knows. On the basis of such knowledge the teacher can decide whether additional instruction is needed and if so what is to be taught. After the teaching has taken place it is again desirable to know how successful the instruction has been. These are the purposes of almost any good achievement test.

Dr. H. F. Kilander, dean and professor of health education, Panzer College of Physical Education and Hygiene, East Orange, N. J., has formulated this health knowledge test to try the knowledge of high school seniors and college freshmen in the general field of health education. The test may be used in high school and in the upper three classes in college. The test consists of 100 multiple-choice questions dealing with health knowledge. The test samples the fields of nutrition, communicable diseases, sanitation, safety and first aid, social and mental health, including common errors and superstitions in each field. The test is easy to administer and should be valuable to instructors who need such help; it makes no claim to test health habits or attitudes.

J. M. A.

Socialized Medicine in the Soviet Union

By Henry E. Sigerist, M.D. Cloth. Price, $3.50. Pp. 378. New York: W. W. Norton & Co., Inc., 1937.

"I HAVE NOT stressed inadequacies and inefficiencies in this book, nor have I wasted time in describing poor institutions," says Dr. Sigerist. He forestalls critics by saying that some of them "will declare that I have written a medical Utopia." Even without a specialized knowledge of Russia, one cannot but challenge such statements as "Now that the Revolution has come to an end, the new Constitution gives all citizens democratic rights."

The first chapter expounds Marxian economics and dialectic materialism, including the labor-value theory and conclusions based on it which Marx took from Ricardo and which have today been discarded both on the left and on the right by advancing economic science. In spite of the author's disavowal, much of the book sounds utopian—or like a description of hopes confused with realizations. That some dreams have been made facts with some great results achieved cannot be denied. Starting from a condition of chaos and poverty at the close of the war, a gigantic system

of coordinated medical service has been created for more than 180 million persons. Medical education has been largely developed and the necessary medical institutions have been created within the last twenty years—and in most cases within the last ten. Theoretically this system begins with a survey of the social and economic conditions affecting the health of the population, which is to form the foundation for comprehensive preventive measures. Industry, housing, food, recreation and everything else that can affect human well-being are to be knit into a single pattern. Accomplishments in every one of these fields are described and the statements lavishly documented. Vast sums have been assigned in the national budget to carry out this system. "The entire health work is operated and controlled by the Commissariats of Health and their subordinate organs." A symmetric, diagrammatic scheme covering a territory nearly three times as large as the United States is outlined. Medical institutions are set up in every productive unit, industrial or agricultural. Care begins before birth and extends with old age insurance until death. Photographs of modernistic buildings to house these activities are shown. We are told how medical care has gone into the mountainous districts of the Caucasus, the arctic regions and the tropical rest homes as well as the great industrial plants and the agricultural cooperatives.

It is admitted that medical education is still deficient, but plans provide for improvement. However, it is admitted that in 1937 there were about 160,000 persons who received "middle medical, dental, and pharmaceutical training," and that these "half-trained doctors"—known as *feldshers*—are still giving much of the medical treatment, which leads the author to say: "I personally would prefer to be treated by a Soviet feldsher than by an American chiropractor, naturopath, or Christian Scientist."

Already much has been done in conquering the epidemics that not so long ago swept over Russia at frequent intervals, and the campaign against venereal diseases ranks in results—considering the conditions to be met—with that of any other nation. The sums assigned for scientific research in general and for medical research in particular are larger than in any other nation, and it is claimed that the results obtained are already placing Russia among the leading scientific nations.

The sense of unreality grows when the number of available physicians is contrasted with the extent and diversity of the tasks they are supposed to have accomplished. They not only provide a general medical care for the people, which we are constantly told covers many features which the medical profession of other countries has not yet been able to undertake; but they also conduct specialized and comprehensive organizations to fight tuberculosis, malaria, cholera, venereal diseases and nearly all other significant plagues; direct the famous system of crèches; supervise all phases of industry, including physical examinations annually or semiannually of all employees; give medical inspection and care to travelers at railroad stations; maintain public health centers; have created and now conduct the largest system of medicinal baths in the world; oversee the physical culture and training of millions; examine every child in the schools, which we are told are now so extensive as to have almost abolished illiteracy; maintain a physician on every ship with a crew in excess of fifty; make detailed individual health surveys of districts, and supervise the rehabilitation of millions of crippled and defective persons. The impression is given that all this is done by about 100,000 physicians, a large proportion of whom (3,000 in one organization) are engaged in research. Such internal evidence leads to a feeling that deeds and dreams have been somewhat confused.

A. M. Simons.

[Note.—Books reviewed or mentioned in this section, other than those published by the American Medical Association, should be ordered from booksellers or direct from the publishers. They may not be ordered through Hygeia or the American Medical Association.]

Courtesy Book

By Horace J. Gardner and Patricia Farren. Cloth. Price, $1. Pp. 112. Philadelphia: J. B. Lippincott Company, 1937.

THIS "guide to more gracious living" affords an introduction to everyday social contact in home, school and business life. It covers a wide range of topics, including conduct, convention, culture, conversation and clothes. Special chapters deal with personal neatness; table technic; correspondence, business and social; and proper procedure for special events, such as christenings, birthdays, graduation, week-ends, travels, engagements, weddings and funerals.

The rules of convention and courtesy are simply stated and should prove helpful, especially to perplexed youth, which, "standing with uncertain feet," welcomes guidance into the proper paths. There is a fortunate regard for the masculine as well as the feminine point of view.

The book is a primer of "the good life" so far as it involves consideration for others and for the rights of others, with a minimum of emphasis on self.

Leola J. Harris.

Report of Director, 1937

Saranac Lake Study and Craft Guild, Saranac Lake, New York.

THIS report sets forth the functions of the Guild, "to rehabilitate the tuberculous patient; to provide vocational training for him, to see that he makes wholesome social contacts, to help him financially, to amuse him, to increase his education; and even to persuade him to remain in Saranac Lake until his cure is complete . . . behind all Guild activities lies a broad philosophy . . . the cure of . . . such a 'long time' disease as tuberculosis, involves not only the repair of physical abnormalities but also the stimulation of wholesome mental activity." To this end, as recorded in this report, the Guild employs such activities as class instruction in numerous subjects covering such diverse fields as radio theory and pastel drawing, short story writing, economics and psychology. Clubs are maintained with various interests such as the camera, the radio, the drama, music, art and discussion. There is private instruction in many subjects. A weekly news sheet is published at a profit, and radio programs to the astonishing number of 519 in one year are broadcast, including sketches as well as talks.

A Guild library with a readers' advisor is maintained; there is craft instruction, vocational counseling, social activity, art and music activities and employment service to recovered patients. The work is financed through grants and donations. The report is well worth the attention of all those interested in rehabilitation of the sick, not only of the tuberculous but also of cardiac and poliomyelitis cripples, the deafened or any other handicapped group. The work as carried on at Saranac is not "boondoggling" to pass the time away. It is real grappling with real problems, and it carries with it the psychologic tonic of accomplishment, a vital factor in recovery from any disease. This is not a fancy report; it is neatly mimeographed and bound in a cheerful yellow cover, also mimeographed — undoubtedly the report is a product of the guild activities.

W. W. Bauer, M.D.

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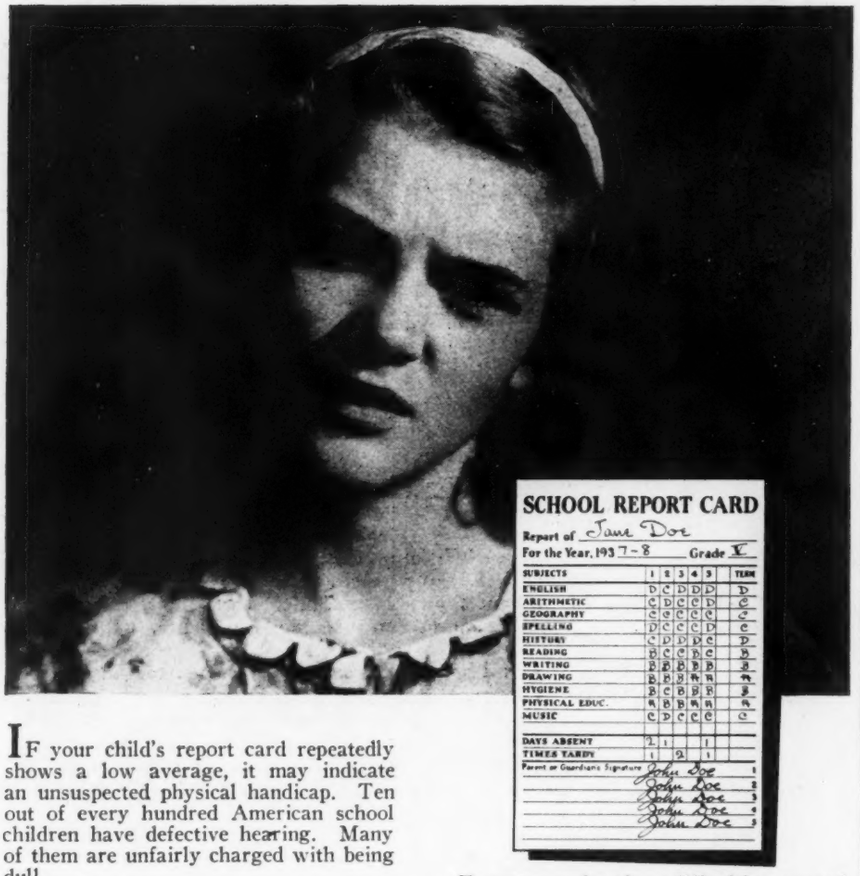
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Report of Jane Doe
For the Year, 193 7-8 Grade V
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ARITHMETIC C D C C D C
GEOGRAPHY C C C C C C
SPELLING D C C C D C
HISTORY C D D D C D
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DAYS ABSENT 2 1 1
TIMES TARDY 1 2 1
Parent or Guardian's Signature John Doe 1
John Doe 2
John Doe 3
John Doe 4
John Doe 5

IF your child's report card repeatedly shows a low average, it may indicate an unsuspected physical handicap. Ten out of every hundred American school children have defective hearing. Many of them are unfairly charged with being dull.

Inattention, disobedience, a far-away expression, any one of these may point to ear trouble. Once this has been overcome, the school work of these children improves.

Hearing defects often start in childhood, as a result of neglected or undiscovered ear and throat troubles. If detected and treated in the early stages, many cases can be relieved.

Warnings of Ear Trouble

Signs of ear trouble in children should never be disregarded. Such symptoms are moisture or a discharge in the outer ear canal; pain, tenderness, itching in and about the ear.

Deafness is often caused by infections in the middle ear, as a result of prolonged head colds, diseased tonsils, enlarged adenoids, or diseases such as scarlet fever, measles, influenza. The child's ears should be examined by a competent physician after recovery from any such infectious disease.

Temporary hearing difficulties caused by wax in the outer ear, or by foreign bodies—for instance a pea, a bead or a paper pellet—disappear when the obstruction is removed. This should usually be done by a doctor because the ear is a delicate mechanism. Home treatment may cause injury.

Hearing Tests in Schools

Partial deafness causes so many children to fall behind in their school work that many schools are now providing periodic hearing tests. These tests are made with the aid of scientific equipment which reveals even a slight impairment of hearing.

When medical science cannot restore a child's hearing, instruction in lip reading will help the child keep up with classes and have a fairer chance in later life.

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NORMAL ABNORMALITIES

(Continued from page 837)

One final note is in order. It concerns our social milieu. Any program of mental health which lays down principles for the guidance of individuals, but which says nothing about the conditions in which these individuals work and love and play, is a program which never will accomplish its purposes.

Few persons think of our society as furnishing just the ideal environment for the blossoming of individual personalities. Most agree that certain changes might well be made. Wars are generally regarded as stupid and barbaric and outmoded ways of dealing with international problems. Strikes and injunctions are generally regarded as wasteful measures in industrial conflicts. Lynchings are generally regarded as sadistic orgies which breed disrespect for law. Scandals in political matters cause citizens to question the merits of the democratic process. These and countless other matters interfere seriously with the normal, full development of individual personalities. Seldom, it would seem, does the natural or the man-made environment help the individual to attain stature.

This situation, if it does exist, is certainly not an inevitable one. Sociologists tell us that the final interests of the individual and of society are one and the same. The natural world sometimes smiles and sometimes frowns on man's efforts; but its most persistent mood seems one of indifference.

Change is continuous everywhere, however one feels about it. As previously indicated we know some of the areas in which we wish change. The trouble comes, not in locating the sore spots in our civilization nor in agreeing pretty well what should be done about them, but in choosing the methods of bringing about the desired results. Conflicting ideas are advanced by law makers, by rear admirals, by preachers, by taxicab drivers, by professors, by barbers, by newspaper editors, by munition makers.

We do not know what form social engineering will take in the future. We do know some of the goals it will seek. We also know that it will be a cooperative effort. We know that the individuals who participate will be engaged in the most important business ever to attract human attention. Finally, we know that the individuals who participate will have little occasion or need to dwell on minor personal troubles. They will have found the surest way yet discovered to happy living!

BACKYARD SWIMMING POOL

A Letter from a Reader

Aug. 1, 1938

To the Editor of HYGEIA:

I was pleased to see your magazine, HYGEIA, recognizing the backyard swimming pool in the article by Allen S. Johnson on page 720 of the August issue. The article contains some interesting information but there are some statements which require revision.

The concrete proportions of 1:2:4, while still used to some extent, have been considered an out-of-date specification for many years. A reasonably good quality of concrete is watertight without the addition of any so-called waterproofing compound.

This article gives the impression that concrete will absorb a great amount of water. As a matter of fact, the amount absorbed by concrete is negligible. However, even the small amount absorbed causes the concrete to expand and thus close small cracks, caused by improper design or construction, through which water may leak when the pool is first filled.

If the bottom of a pool is to be colored, only very light shades should be used. White is the best color since it makes it easier to see persons or objects in the pool and shows up any dirt which may accumulate on the bottom.

Several types of paint may be used satisfactorily on swimming pools. However, there has been considerable trouble with painting pools, principally because people do not realize the importance of following the manufacturer's instructions in every detail.

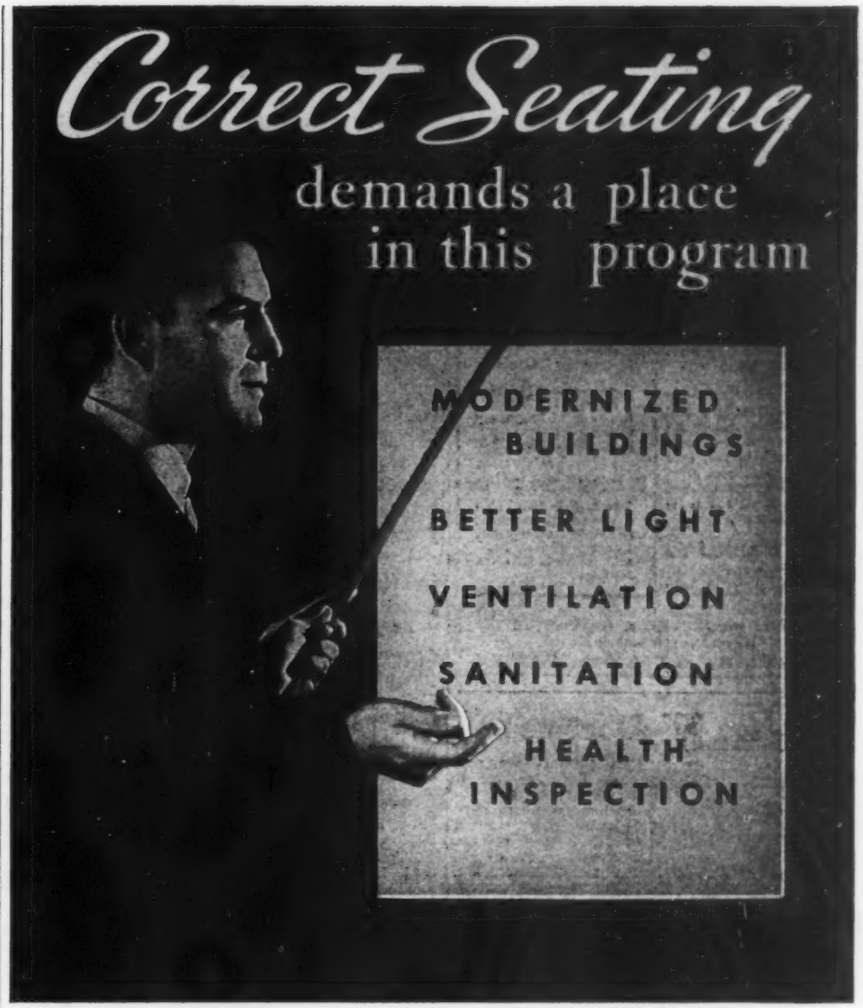
"Sludge" is mentioned in several places. Certainly the water should not be kept in a pool long enough for sludge to accumulate.

The sanitation problem is difficult with a "fill and draw" pool. Intermittent disinfection is not satisfactory but is generally considered better than nothing.

Most authorities on swimming pool sanitation agree that the purity of the water is dependent more on the number of bathers than on the "man swimming hours," since much of the contamination from a bather is given off to the water in a relatively short time.

Requiring a soap and water bath before entering the pool is an excellent sanitary requirement but one which is frequently neglected. This will greatly diminish the polution of the pool. Attention should also be given to the cleanliness of the bathing suit.

A. J. BOASE
Manager, Structural Bureau,
Portland Cement Association.



AS one interested in community welfare you have worked for better schools. You have encouraged such improvements as better lighted rooms, proper ventilation, gymnasium facilities, sanitary wash rooms, regular inspections by doctors and dentists.

Seating demands equal attention. For, as you must know, posture plays an important part in the well being of both young and old. Vital organs cannot function properly if they are crowded by hours of humped-over sitting. "Schoolroom slouch" is the inevitable result.

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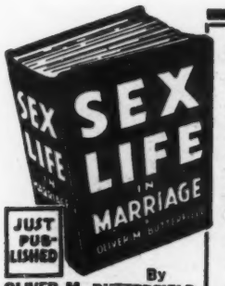

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EXERCISE (Continued from page 844)

ineptness or to that faithful friend of the poor golfer, tough luck. "If anybody else had played that ball it would have gone through that one bunch of leaves, but I could hit a branch a hundred times out of a hundred. Ninety per cent air! Phooey!" We know his plaint to which our own lips may not be total strangers, but his opponent can put up a psychologic defense only, and such a defense is usually regarded as "infra dig" unless it is introduced with a good bit of subtlety. On appoaching the river hole, for example, the competitive but unscrupulous gent may say to his opponent, "Bill, was it last Sunday or a week before that you topped your second into the river?"

By the same token, golf is unique in that it can be played with a good deal of pleasure and profit by a lone player who has as his only opponent that shadowy but rather definite and obtrusive old fellow, Colonel Bogey. Also in competitive golf one is always playing more or less against this traditional antagonist as well as the more fleshly ones. The keenly competitive man may prefer winning by a score of 120 to 121 to losing 82 to 81; but many a man of different temperament would much prefer to play good golf and lose than poor golf and win.

This dual character of the game explains a part of the insidious but powerful influence it exerts. One day Filkins is way off his game but beats his regular week-end opponent, Wetherby, by a fair margin, and he forgets all his sour shots. When he reaches home and his wife asks him what kind of a day he had, he replies, "Swell." "How was your game?" "Oh, not so good, but you should have seen old Wetherby. He was good on all shots except off the tee and the fairway and out of the rough and on the green. Ha, ha. And did it burn him up! I thought he was going to wrap his brassie around a tree on the sixteenth and give the rest of his clubs to the caddy. That guy has a temper like a buzz saw." The next week it may be that Wetherby plays over his head and amasses a mere 86 against Filkins' 89; and Filkins comes home, as golfers must ultimately, to meet the traditional wifely interrogation and reply, "Oh, that lucky stiff won by a stroke, but I broke 90—first time this year. And I've found out what was the matter with my approaches. I ought to be in the eighties right along this season." Of course, being experienced, you and I know what will happen to Filkins' approaches the next time he goes out.

There are even a few philosophic golfers who may admit on reaching home that "everybody was rotten" but add that the day was wonderful and that a good time was had by all in spite of poor scores.

Further, golf is perhaps the only game (not the only sport, for one must think of such things as hiking, canoeing, hunting and fishing) which takes its follower into real country for a long time. Handball and squash are usually played indoors, and the surroundings of tennis are apt to be urban; but since the early days, attention has been paid to laying out golf courses amid good surroundings which include trees and flowers, birds and hills, green grass and dustless breezes, perhaps mountains in the middle distance and probably water in stream or lake or sea. Eighteen holes will require two or three hours, or more under certain conditions, an objection for the person who can command but little time for his exercise but a great advantage to him who can be "called out of town" for an afternoon or a day. A lack of haste is essential to the thing, a lack which all but necessitates a certain relaxed state of mind. The telephone cannot be heard on the course, and salesmen seldom have the courage to pursue the tired business man thither. For a half day at least he has a complete change of scene and is free from his customary exasperations, although special ones may find him out.

This is a game unusual, if not quite unique, in that its technic is so varied that neither great strength nor unusual activity is essential. Long hitting is valuable, but the long hitter does not always win. He may be hole high in two on a par five hole and take six while his short hitting opponent may be on in three and down in four or five, for a light touch and finesse find their places too. A 10 foot stroke on the green counts just as much in the total as a long wood shot on the fairway. Since one does not have to run or adapt oneself to one's opponent's game or hit a moving ball, the game can be played perfectly well by a gentleman who is myopic or has a wooden leg. It combines distance and accuracy, power and delicacy in a most intriguing way.

[NOTE.—Dr. Reed's discussion of golf will be continued in the October issue.]

EYE PHYSICIANS, OPTICIANS AND THEIR WORK

(Continued from page 811)

the expectancy of life was thirty years, now it is between fifty-eight and sixty. There are more than ten times as many people over fifty who depend on glasses for their work and recreation as were living one hundred years ago. Within the last few years it has been found that these old people have astigmatism which changes from year to year, so that, for the best sight, their eyes have to be scientifically measured and their glasses changed. Glasses may still be worn for looks; but for health, happiness and efficiency, *glasses, that fit the eyes* are an absolute necessity.

DEFINITIONS

Aberration: A defect of the eye which causes imperfect focusing and poor sight.

Accommodation: The power of the eye to alter its focus and see clearly at different distances.

Aniseikonia: Unequal images in the two eyes which makes difficulty in seeing through new glasses.

Astigmatism: A defect of vision, preventing proper focusing. Light coming from one point is not focused to a point, causing poor vision for small objects like letters.

Cataract: An opacity of the crystalline lens of the eye, preventing vision.

Detachment of the Retina: Separation of the two layers of the retina, preventing vision.

Eye Physician: One who, after the regular course in medicine, studies the defects, diseases and injuries of the eye and all that could help to improve vision or prevent eye diseases.

Eyestrain: Strain of the eyes and parts connected with them, causing poor vision, inflammation of the eyes and strain or disease of the nervous system.

Glaucoma: Hardening of the eyeball, causing blindness and great pain, coming on usually after 40, either gradually or suddenly.

Hyperopia: Farsightedness, a defect in the shape of the eye that causes strain to see things distinctly, especially objects close to the eye, and in old age, when the power of accommodation is lost.

Myopia: Nearsightedness, a defect in the shape of the eye, such that nothing can be seen clearly without glasses, unless it is held very close to the eye. It tends to cause cataract, detachment of the

THE IDEA THAT GOOD LIGHT IS EXPENSIVE

Actually light is one of the cheapest of all modern conveniences. The average American family spends five cents a day for electric light. The price of a package of chewing gum! The light commonly used to read a full length novel costs less than three cigarettes! And today's improved equipment costs far less than the makeshifts of a few years ago.

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retina and other diseases of the eye.

Oculist: An eye physician.

Ophthalmologist: One who has studied the science of ophthalmology, an eye physician.

Optician: One who makes, mounts and adjusts glasses and optical instruments, according to the prescription of an eye physician, and who understands and deals in optical instruments.

Ophthalmoscope: An instrument for throwing light into the back of the eye to examine it.

Ophthalmometer: An instrument for measuring the curves of the front of the eye and their effect on the focus of the eye.

Optometrist: One who claims ability to measure the eyes for glasses without knowing about its diseases or any regular study of medicine.

Optics: The science of light.

Presbyopia: The condition of the eyes in old people after losing power of accommodation and after other changes that make seeing difficult or impossible.

[NOTE.—This article will be concluded in the October issue.]

OF MOSQUITOES AND MEN: II

(Continued from page 806)

The Las Palomas story was duplicated many times throughout the South in 1934. Though the malarial tide was rising, the disease claimed but 5.8 per cent of the ten millions in the relief drainage area. Without control work the rate would have been three times that figure, it is estimated. Dr. Williams believes that "if the present program can continue, the ultimate benefits to the South are incalculable.

"Still it should be thoroughly understood that a mosquito control campaign must be continued and maintained from year to year—it is a never ending warfare against a very persistent enemy." Men "keep building malaria into communities" as fast as relief workers manage to remove it. Lumbermen clear river banks, and soon there are swamps. "Take the Wabash Valley," says Dr. Williams. "When the forests shaded the land, there was no room for Anopheles. But after the lumbermen felled the trees, leaving sunlit spaces over leaf-covered pools, the mosquitoes came and with them came malaria. The disease raged throughout the valley. Finally, the valley was drained and farmers ploughed the rich lands. And malaria disappeared."

"Paradoxically enough," the *Engineering News Record* declared in an editorial, "it is the engineer who is the greatest contributor to mosquito propagation and the sponsor of possible disease epidemics, because in his designs for highways, reservoirs, irrigation projects, and other modern structures he frequently fails to incorporate provisions for adequate drainage of shallow, stagnant water."

Mosquitoes take advantage of every carelessness on the part of men. They carry other diseases almost as costly to men as malaria. Yellow fever, borne by mosquitoes, has been almost wholly eliminated from the western hemisphere, and filariasis is not a general menace here, but dengue or breakbone fever has claimed many victims. Scientists have discovered that mosquitoes also carry fowlpox, heart-worm of dogs and encephalomyelitis of horses. All three of these animal diseases cause enormous economic losses.

In the northern states, pest control operations have been launched to eradicate other types of mosquitoes. New Jersey estimates that mosquito control work will bring the state an increase in land values of $507,000,000. The cost of control work forms a very small fraction of this total. Though the northern projects were designed to eradicate principally salt-marsh and inland pest mosquitoes, Anopheles has been found in those states. Probably malaria has not appeared because the population harbors few carriers.

Malaria, according to Dr. Howard, wreaks its greatest damage in the Mississippi delta, a region of the richest agricultural possibilities. Yet "it has always been held to a low point of development by the disastrously prevalent malaria that undermines the morale of the inhabitants." Since malaria reduces efficiency by at least two-thirds, Dr. Williams believes the delta has realized but a third of its potentialities.

The American mosquito control program forms part of a world-wide movement. The work, according to Dr. Howard, now extends "from Saskatchewan to Valparaiso, from the Maine coast to Rio de Janeiro, from Japan to the Philippines and Australia, from the Dutch East Indies through British India to Belgrade, Jugo-Slavia, from Greece, Italy and Spain down to South Africa. . . . The fight is on in full force. We realize, in rather full measure, what mosquitoes have done to us, and what they will do if we are not triumphant in the end."

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TUBERCULOSIS UP TO DATE

(Continued from page 798)

may occur in pneumothorax. I am fully aware of their seriousness when they do occur, but what I am trying to emphasize is that they take place rather infrequently, especially when compared with such accidents as a large hemorrhage, spread of the infection to the good lung or involvement of the intestines and the larynx that may take place when an uncollapsed cavity is present. I do not know of any surgical procedure that does not have a certain amount of risk. Even the removal of the appendix, which is advised as soon as acute appendicitis develops, carries with it a 4 per cent death rate.

One question that is frequently asked is, "How long do I have to continue with pneumothorax treatment?" It is still a matter of opinion as to when pneumothorax should be stopped. Certain facts however have been brought out: first, that recurrence of the tuberculous process in the reexpanded lung is frequent if a pneumothorax is carried for less than two years, and second, that the larger the cavity is, the longer the pneumothorax has to be continued. The duration of pneumothorax depends on a careful study of the patient and close observation of him during reexpansion, which should extend over a long period so that the collapse may be reestablished if symptoms should return. On the whole it may be said that no pneumothorax should be carried on for less than two years and that collapse in most cases should be continued for at least three years.

What can one expect in the way of "cure" from pneumothorax? Here again it depends on how one looks at the matter. If one includes in one's figures those cases in which adhesions prevent an effective collapse, the final statement will not be as "rosy" as results quoted when only the effective cases are considered. When any person who is about to receive pneumothorax asks "What chance for arrest of my disease have I?" the answer is usually something like this: "If we are successful in attaining an effective collapse and if unforseen complications do not take place, the possibility of an arrest of the disease is very good." This is especially true in unilateral disease and when the cavity is not large. When the disease is bilateral the outlook for recovery becomes more problematic; but even under such conditions good results are often obtained when an effective collapse of the worse side can be established. Patients who at the

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very start present lesions in the intestines or larynx or both as a rule have a stormy period ahead of them. But fortunately the rule does not always hold true. Complete arrest of the disease in these organs has occurred frequently, when an effective collapse of the cavity by pneumothorax was made possible. Considering all the possible factors that operate to interfere with an effective collapse, such as the extent of the disease or the size of the cavity, it is estimated that out of every ten patients with far advanced disease in whom pneumothorax is induced, four eventually return home able to carry on a normal life under somewhat restricted regimen. In those showing moderately advanced lesions, the figures may reach as high as six to seven out of every ten. It should be remembered that those who come to pneumothorax have frequently had the benefit of bed rest or else present such far advanced disease that arrest by bed rest alone can be expected as often as one looks for miracles. It is obvious therefore that every successful pneumothorax means a life saved. I know of no better way of concluding this chapter than by quoting from an address given before the American Tuberculosis Association:

"I would emphasize . . . the fact that whereas the air and rest cure's object is practically limited to the arresting of initial cases . . . artificial pneumothorax wins its most striking success in cases, which before its advent would have been regarded as hopeless, in cases in which the lesions are extensive and excavated, the sputum is abundant and the fever high. It is not only capable of putting an end to those symptoms, to stop the progress of the lesions and cicatrize them; it is not only capable of reducing the sputum together with its bacillary contents to naught, and, therefore, to make the patient a harmless member of his family and of his community. It can restore him unconditionally to health, with a full capacity for work. Consumptive women treated by artificial pneumothorax regain the rights of motherhood. . . . Who could have dreamed of such achievement twenty-five years ago except that silent, solitary, neglected man in Pavia, Forlanini? But he knew he was on the right path. He knew his day would come. His day has come. And it is a matter for gratification to feel that, when the old master died, he had seen the glorious dawn of that day."

[NOTE.—In the October issue, Dr. Potter will discuss the surgical treatment of pulmonary tuberculosis.]

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1. What proportion of a normal person's body weight represents stored fat? *See page 812.*
2. Whether tuberculosis cavities larger than 1 inch in diameter may be cured by bed rest alone? *See page 796.*
3. What three diseases lice transmit to man? *See page 821.*
4. Whether glass is of recent origin, and when it was first made? *See page 809.*
5. What is the malarial tide, and how often does it "ebb and flow" in the United States? *See page 803.*
6. Which is better for a toothache, hot or cold water, and why? *See page 818.*
7. In round figures, how many golf clubs or courses are there in the United States, and what is the number of persons they may simultaneously accommodate? *See page 829.*
8. Are feelings of impending insanity normal or abnormal? *See page 782.*
9. What are the four commonest causes of nervous indigestion? *See page 776.*
10. Whether a patient with heart disease should drive an automobile? *See page 800.*
11. What was the 1937 accident death toll? *See page 838.*
12. What is the difference in principle between Continental and American cookery? *See page 826.*

STUDENT HEALTH

Photographs on pages 789-793 from Acme, "All the Children" (New York Public School Report), Chicago Board of Education, Stephen Deutch and "Your Children" (Los Angeles Public School Report).

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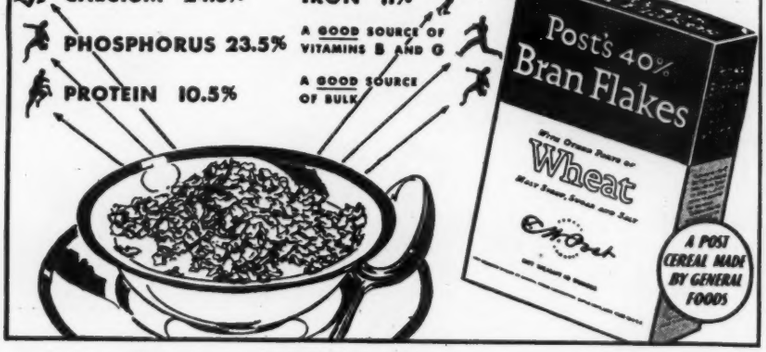
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PARASITE TRICKS

(Continued from page 824)

Can lice be controlled? Among people who have average living conditions in peacetimes there is little difficulty. One great student of insect life remarked that the "bath tub is the first line of defense against lice." If the person and clothing can be kept clean, there is practically no danger of louse infestation. Every time the body is bathed or clothing washed, it is difficult for the louse to survive. Neither can he long survive separation from his host. So if conditions make it possible to maintain a decent standard of living, lice cease to be a problem. But when poverty and disease lower standards, when clothing is worn for long periods without changes, the body is unwashed and living conditions are correspondingly inferior; then from somewhere the lice appear. Hence in the examining rooms of county hospitals, of jails, poorhouses and the like, lice are liable to appear at any time. It is always a serious problem to exclude them from such places.

When present on the head, lice may be removed by cutting the hair short, burning the cut hair and thoroughly shampooing the head to remove any vermin that may have escaped. The eggs can be removed by dissolving the cement in strong vinegar or gasoline. Among women who wish to preserve the long hair the problem is somewhat more complicated but can be readily solved. One excellent procedure is to wet the hair thoroughly with a 2 per cent solution of carbolic acid. This is most easily done by having the woman lie on her back with hair hanging over the edge of the bed or table and dropping it into a pail or pan, where it is thoroughly "sloshed" around in the carbolic solution for ten minutes. Allowed to drain a short time, it is then wrapped up in towels while still quite wet and allowed to remain that way for an hour. If well done, this process completely destroys both lice and eggs. The smell of the carbolic acid disappears rapidly after rinsing and drying the hair.

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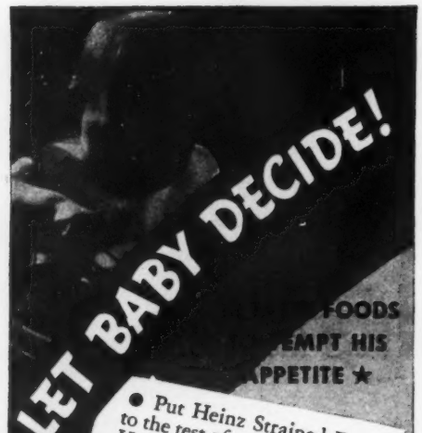
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and are being used daily at ports of entry into the United States and other countries. In general, the method requires the immigrants to pass into rooms, remove their clothing, which is then disinfested of lice, while the immigrants are soaped and often sprayed with solutions containing gasoline. After they take shower baths, their clothing is returned to them from the sterilizers. Such processes are effective, and even when over 2 million men returned from Europe after the war, no lice were able to survive the rigors of port regulations.

For infestations occurring in camps, simpler measures may be devised. An ordinary barrel may be arranged with a screen wire bottom and a fairly tight top; this is set over a water container, which is heated to the point of producing steam. Steaming the clothing in such a barrel until it is thoroughly heated will destroy all lice and eggs.

Infested clothing may be practically sterilized with an ordinary hot flat iron, particularly if the seams are carefully ironed and pressed.

Lice are not only loathsome and disagreeable neighbors but by their tricks may become most dangerous ones. Efforts to improve the standards of living have other values besides those of comfort.

[NOTE.—In the October issue Dr. Skinner will discuss ticks and their tricks.]

QUESTIONS and ANSWERS

(Continued from page 846)

Mineral Content of Foods

To the Editor:—I have read that a pediatrician advises housewives on a limited income to boil 1 pound of bones, 1 tablespoonful of vinegar and 1 pint of water six hours to make up a good vegetable soup. This is to insure an adequate calcium intake. I found that the same amount of calcium is in a gallon of this soup as in a glass of milk. In this climate during the long, cold winter a great deal of vegetable soup is used, and I had hoped that I would have better success with my experiment.

M. D. G., Quebec, Canada.

Answer.—The optimum quantity of calcium in the diet for the growing child is estimated to be about 1 Gm. (gram) a day and the minimum requirement for the adult to be about 0.45 Gm. a day. Certainly,

Everyone loves MILK
when it's made into Rennet-Custards

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Make rennet-custards with either:

"JUNKET" RENNET POWDER—Already sweetened and flavored for making an endless variety of rennet-custards. Made in a minute—just add to LUKEWARM milk. No eggs, no baking, no boiling. Six tempting flavors:
Vanilla Chocolate Lemon
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"JUNKET" RENNET TABLETS—Not sweetened or flavored—add sugar and flavor to taste. More economical for making rennet-custards, easily digested milk foods for infants and invalids. Also for making smoother ice cream with less cream in hand freezers.

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—dozens of new desserts and ice creams. Mail postcard to "THE 'JUNKET' FOLKS," Chr. Hansen's Laboratory, Inc., Dept. 339, Little Falls, N. Y.

HELPS TO BETTER COOKERY ARE featured in the advertisement of the Kitchen Craft Company on page 856. Without any cost, you may obtain a valuable food chart and "Hints to Health," together with food selection information.

HOW TO KEEP A LIVELY, HEALTHY BABY properly covered on cold nights is a problem for many a mother. There is one easy, certain way to do this, and without great expense. See ad of Snuggle Rug Company on page 856, and be sure to send for their free booklet, "Better Things for Baby."

YOU WILL FIND SOME RATHER SURPRISING facts about bread in the reprint offered by the American Institute of Baking in their ad on page 851. It is entitled, "Our Daily Bread," and is just one part of the useful information being disseminated by the Institute. Watch for an informative ad in each future issue of HYGEIA.

HAVE YOU NOTICED THAT BY PURCHASING Carnation Milk you can have the added nutritional value of the "bone-building, tooth-protecting, sunshine vitamin D," not found in ordinary milk? And, there are many attractive ways of using Carnation Milk. The booklet, "The Contented Baby" contains many splendid recipes and beautiful illustrations. A copy is yours for the asking. See page 864.

in many parts of the world where milk is not an ingredient of the diet, the calcium ingested must be much less than the minimum requirement. Experiments with rats indicate that a low calcium intake is compatible with excellent growth, if the phosphorus intake is at the same time high. It is true that milk is the only excellent source of calcium in the diet. One liter of milk contains 1.2 Gm. calcium, and skimmed milk contains a slightly greater quantity. Nuts have a relatively high calcium content (almonds contain 239 mg. [milligrams] of calcium per hundred grams), and green leaves contain a moderate amount (lettuce contains 43 mg. calcium per hundred grams). But one can eat only a limited amount of either nuts or green leaves. On the other hand, one can take large quantities of milk with ease. If milk is available, it is the desirable source of calcium, and every person ought to take at least one pint of milk daily, either as a drink or cooked in the food.

If milk is not available, calcium from all other sources in the diet is needed. The question arises, therefore, to what extent the recipe given can serve as a source of calcium. Measurements indicate that the soup made according to the recipe contains approximately 35 mg. calcium per liter. To meet "optimal supply for the growing child of 1 gram daily," 28.5 liters of the soup would be required. If a person took half a liter of the soup, he would receive 17 mg., and one plateful would yield about 8 mg. calcium. One-half liter of the soup would contain about the same amount of calcium as 15 cc., or ½ ounce, of milk. Many foods commonly used contain as much or more calcium than the soup. Carrots, for example, contain 56 mg. per hundred grams and cauliflower 123 mg. The soup, then, cannot be regarded as having any great value as a source of calcium, though it would add slightly to the amount furnished by the diet as a whole. It is possible, however, that the soup might have values other than its calcium content. It doubtless contains some gelatin. It is conceivable that the bone marrow or the bone itself contains soluble dietary supplements which may have values. It would be entirely wrong to conclude, therefore, that the time honored custom of using a soup in which bones have been boiled in the presence of acid (vinegar) may not have virtue. But the virtue does not lie in its source of supply of calcium.

(Continued on next page)

"Aren't you tempted to brew yourself a cup of coffee in spite of the doctor's advice?"
"Not tempted at all—you see, he said 'DRINK POSTUM INSTEAD'"

"NO MORE COFFEE" would seem like a pretty harsh sentence to most folks. Because so many of us can't really enjoy our meals without a hot drink.

Of course, this problem doesn't bother lots of people—they can drink coffee without suffering any ill effects. But a great many others find that coffee disagrees with them.

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For Postum's delicious, full-bodied flavor, its tempting aroma and warmth will help even the most rabid coffee-lover forget all about forbidden beverages.

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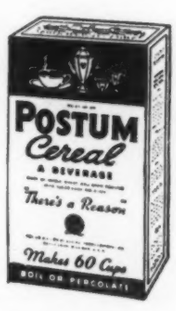

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Ask your doctor about this wholesome milk, which bears the seal of acceptance of the Council on Foods of the American Medical Association. And write today for your free copy of "The Contented Baby"—32 pages, color-illustrated, containing many splendid recipes. . . . *Carnation Company, Dept. 701C, Gas Light Building, Milwaukee, Wisconsin.*

IRRADIATED Carnation MILK

"From Contented Cows"

Hay Fever

To the Editor:—Can you tell me where in the United States I can obtain relief from hay fever?

M. S., Iowa.

Answer.—Arizona, New Mexico, Utah, Idaho and Nevada are relatively free from ragweed, and many patients who are allergic to this weed get relief there. On the other hand, these states have other forms of vegetation to which the inquirer may be sensitive.

California, Oregon and Washington are relatively favorable states for sufferers from the fall type of hay fever; but on the other hand, they also contain vegetation somewhat different from that in the states previously mentioned, some of which may be of a character to give symptoms to a sensitized person.

Wisconsin and Minnesota are not favorable states for hay fever sufferers, except those portions thereof immediately bordering on Lake Superior; that is, the coastline from about Ashland, Wis., to Duluth, Minn., and northeastward along the shore of what is called the Arrowhead country. One need not go far from the shore to lose the benefits of the lake winds. The reason these shores are usually free from pollen is because the prevailing winds are off the lake and therefore not heavily laden with pollen.

The pine woods of Maine, but not the Maine coast, may be found favorable.

It is important to remember that different patients react differently. A locality which may be favorable for one patient may not be so for another. Before making any permanent commitments, such as leaving a job, selling or buying property or any other steps of major importance, it is better for the patient to try a visit to the proposed locality and get first-hand experience.

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a three-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed. Anonymous letters are ignored.

THE HYPOCHONDRIAC

(See page 799)

"The Hypochondriac" is the first of a series of medical caricatures by William Sharp which will be published in HYGEIA. Original signed and limited lithograph prints are available.